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PHYSICS AND FRUSTRATIONS IN THE THIRD WORLD*

Abdus Salam

Introduction

Until two decades ago, physicists believed that there are four fundamental forces of Nature ; the gravitational, the electromagnetic and the two nuclear forces, the weak and the strong. This was a tremendous simplification in the scheme of things, but it was always the dream of physicists to seek for a still further unification in the scheme of things. Two decades ago, my colleagues, Professors Glashow, Ward, Weinberg, and I, suggested that there were indications that the weak nuclear force was not really different from electromagnetic and that the two were aspects of one simple force. The analogy was with the work of Faraday and Maxwell who a hundred years before had shown the unity of the phenomena of electricity and magnetism on the one hand and the phenomenon of light on the other.

The first indication of the theory's correctness came in 1973, when the European Nuclear Research Laboratory at Geneva (CERN) found experimental evidence of what are called neutral currents which are an essential part of the predictions of the theory. The clinching evidence, however, was provided in 1978 by the Stanford Linear Accelerator in the United States which, in an epic experiment, confirmed the unification of the electromagnetic force with the weak nuclear force to one part in four thousand as we had predicted. An experiment at Novisibirsk by a group led by Professor Barkov further confirmed this.

Later this year, (1981), experiments will be undertaken at the European Nuclear Accelerator Laboratory—the quarter billion dollar a year laboratory sponsored by the European nations—to produce directly in the laboratory the quanta of the weak nuclear force which our theory predicts. This way, all the ingredients of our unification hypothesis—concerning the unity of the electromagnetic force with the weak nuclear force will have been directly tested.

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* Based on the Convocation Address delivered by Professor Abdus Salam at Calcutta University on January 21, 1981.

The next task is to see if the third force (the strong nuclear) is also part of this unity. Together with Professor Jogesh Chandra Pati of Bhubaneswar and some other colleagues, we have formulated this and suggested experiments to test the idea. These experiments basically test if the proton is unstable ; putting it another way, can a hydrogen atom disappear with a flash of light. This phenomenon, if found, is the unique signal of the unity of electromagnetic and nuclear forces. The experiments are being conducted at the Kolar Gold Field Mines as well as in various other places in Japan, South Africa and the United States. If the results are positive, sometime this year, with Allah's grace, we shall have reduced the four forces to just two.

Then will remain the final goal of uniting gravity with this force which I shall call the electro-nuclear force. It is the physicists' faith that this must also be true, but a precise formulation and its confirmation may take longer. If we can formulate a means of showing this final unity, this will be Einstein's dream with which he lived for 35 years of his life—finally realized.

The fact that we were seeking for a unity among the seemingly disparate forces of nature, is part of our faith as physicists. At the Nobel ceremonies in December 1979, I was asked to reply on behalf of the physics prize winners to the Banquet address of His Majesty the King of Sweeden in the great and glittering Banqueting Hall of Stockholm. With your indulgence, I shall read out part of what I said, for it bears on this faith in the ultimate unity and symmetry of Nature.

"The creation of physics is the shared heritage of all mankind. East and West, North and South have equally participated in it. In the Holy Book of Islam, Allah says :

"Thou seest not, in the creation of the All-Merciful any imperfection, Return thy gaze, seest thou any flaw, Then return thy gaze, again and again. The gaze, comes back to thee dazzled, aweary."

This, in effect, is the faith of all physicists ; the deeper we seek, the more is our wonder excited, the more is the dazzlement for our gaze.

I am saying this, not only to remind those here today of this, but also for those in the Third World, who feel they have lost out in the pursuit of scientific knowledge, for lack of opportunity and resource. It is about this subject I would like to make a few remarks.

Science—the Shared Heritage of Mankind

The history of science, like the history of all civilization, has gone through cycles. I recalled in my Nobel lecture, a historical episode, when, some seven hundred and sixty years ago, a young Scotsman left his native glens to travel south to Toledo in Spain. His name was Michael, his goal was to live and work at the once Arab universities of Toledo and Cordova.

Michael reached Toledo in 1217 A.D. Once in Toledo, Michael formed the ambitious project of introducing Aristotle to Latin Europe, translating not from the original Greek, which he knew not, but from the Arabic translation which was then taught in Spain. From Toledo, Michael travelled to Sicily, to the Court of Emperor Frederick II.

Visiting the medical school at Salerno, chartered by Frederick in 1231, Michael met the Danish physician, Hendrik Harpestraeng—later to become court physician of king Eric IV Waldemarsson. Hendrik the Dane had come to Salerno to compose his treatise—preserved in seven volumes at the National Library in Stockholm—on bloodletting and Surgery. Hendrick's sources were the medical canons of the great clinicians of Islam, Al-Razi and Avicenna, which only Michael the Scot could translate for him.

Toledo's and Salerno's schools, representing as they did the finest synthesis of Arabic, Greek, Latin and Hebrew scholarship, were the most memorable of international assays in scientific collaboration. To Toledo and Salerno came scholars not only from the rich countries of the East, like Syrya, Egypt and Afghanistan, but also from developing lands of the West like Scotland and Scandinavia. Then, as now, there were obstacles to this international scientific concourse, with economic and intellectual disparity between different parts of the world. Men like Michael the Scot, or Hendrik the Dane, were singularities. They did not represent any flourishing schools of research in their own countries. Even their own countrymen—and in particular those at the Scottish and Danish courts—doubted the wisdom and value of sending them for training for advanced scientific research. After all, how could a study of Aristotle benefit the arts of clipping of sheep and the weaving of woolen cloths on which Scotland then depended for its livelihood.

In respect of this cycle of scientific disparity, perhaps I can be more quantitative. George Sarton, in his monumental five-volume *History of Science,* chose to divide his story of achievement in sciences into ages, each age lasting half a century. With each half century, he associated one central figure. Thus, 450-400 B C., Sarton calls the Age of Plato ; this is followed by half centuries of Aristotle, of Euclid, of Archimedes and so on. From 500 to 550 A.D. is the half century of Proclos ; to this half century belonged that supreme Indian mathematician and astronomer Aryabhat I. From this time the East takes over precedence in the creation of science. Thus from 600 A.D. to 700 A.D. in Sarton's reckoning, was the century of the Chinese Hsiian Tsang and I Ching ; the century to which belonged their great Indian contemporaries—the physician Vagbath and the mathematician-astronomer Brahmagupta—born near my native region of Multan—whom Sarton calls the greatest of his race and the greatest of his time.

The period from 750 A.D. to 1100 A.D.—can be said to be the Ages of Jabir, Khwarizmi, Razi, Masudi, Wafa, Al-Biruni and Omar Khayyam. Just two generations after Omar Khayyam, came that powerful and original mathematician from India—Bhaskaracharya—who in Sarton's phrase was the only one who could be compared with Omar Khayyam in point of genius.

Decline of the East & the Rise of Western Science

After six hundred years of this Eastern supremacy when Indian, Chinese, Arab, Persian, Turkish and Afgan Scientists and Scholars dominated the international intellectual scene, there begin to appear, from the year 1100 A.D. the Western names ; William of Conches, Cerard of Cremona, Roger Bacon—but they would only share the honours with their still greater contemporaries—Ibn-Rushd, Musa Bin Maimoun, Tusi and Ibn-Nafis—the man who anticipated Harvey's theory of circulation of blood.

After 1350, however, the developing world loses out except for the occasional flash of the high-level of scientific work, like that at the court of Ulugh Beg—the grandson of Timurlane, in Samarkand around 1425 A.D. ; or of Maharaja Swai Jai Singh of Jaipur around 1720—who corrected the serious errors of the then Western tables of eclipses of the sun and the moon by as much as six minutes of arc. And this brings us to this century when the cycle began by Michael the Scot turns full circle, and it is we in the developing world, who turn Westwards for science, starting with Sir J. C. Bose, followed by the towering figures of S. Ramanajan, Sir C. V. Raman, K. S. Krishnan, S. N. Bose, M. N. Saha, P. C. Mahalanobis, Homi Bhaba, Salimuz Zaman Siddiqi. S. Chandrashekar, H. G. Khorana and others. As Al-Kindi wrote 1100 years ago :

"It is fitting then for us not to be ashamed to acknowledge truth and to assimilate it from whatever source it comes to us. For him who scales the truth there is nothing of higher value than truth itself ; it never cheapens nor abases him who seeks."

In this history of India's great scientific figures, the pride of place goes to Calcutta, with Sir J. C. Bose, Sir C. V. Raman, M. N. Saha, S. N. Bose and Mahalanobis.

Tradition of Scholarship in Calcutta

In addition to these great men, I have another reason to recall the traditions of fine scholarship which have been the pride at Calcutta University. I remember that after I finished my M.A. in mathematics in June 1946, I was at a somewhat loose end. My parents and well-wishers had always desired that I should appear for the Indian Civil Service Examination. For a bright Indian student this was and perhaps still is—the epitome of a scholastic career. However, because of the Second World War, the Indian Civil Service Examination had been suspended.

Looking back upon this, of course, I count this suspension of the Examination as the first of the fortunate accidents which determined my career as a scientist—rather than as a Civil Servant. However, in 1946, the expectation was that the Indian Civil Service Examination would start again in 1947. I thus had a year's wait. By universal acclaim from all those whom I consulted, it was suggested that the best use I could make of this year would be to leave Lahore and come to Calcutta to conduct post M.A. studies in the Mathematics Department of the Calcutta University. This was the best Department in the country, both for advanced teaching and research. I am sure that the fact that Professor Ganguli came from Calcutta had something to do for the esteem and admiration we all felt for the Calcutta University.

However, at this juncture, as it happened, a second accident happened which determined still more strongly the direction that my life would take.

The then Chief Minister of my State, the Panjab, had, during the War, collected funds from Panjabi landlords for the British Government for the purchase of armaments. The war ended in 1945 and the funds had been left unutilized. The Chief Minister decided to institute a scheme of a Small-Holding Peasants' Scholarship for study abroad. A number of scholarships were offered ; I was fortunate both in getting this scholarship and sailing away the same year—1946—to Cambridge to read mathematics and theoretical physics. Several other scholarships were awarded. Unfortunately, the scholars were promissed admissions only for 1947 or later. In the meantime, the subcontinent was partitioned and with partition the scheme itself and all its scholarships disappeared. As it was, the entire exercise of the then Chief Minister succeeded in one thing only—in getting me to St. John's College, Cambridge, where Professor Dirac—the great physicist—successor to Newton—worked and taught.

Frustrations of Basic Scientists in Developing Countries

Whenever I recall these two accidents—the suspension of the Indian Civil Service Examination and the surplus War Funds being made into a scholarship scheme which did not last after helping me—I render grateful thanks to Allah. But ever since also I have been asking myself, particularly after the independent nations of Pakistan, India and Bangladesh came into existence : is this the way for proud nations to nurture scientific talent ? Is there no systematic means of Talent Scholarships created by our society, followed by a system of Research Fellowships, to help our talented men and women realize their potential ?

In Europe, USA and USSR—the society has organized itself—particularly after the Second World War ; there are endowments, grants, scholarships donated both by individuals as well as governments. In the international sphere, I have very humbly tried to jog the United Nations' Agencies—IAEA and UNESCO—to take care of post-doctoral scholars from developing countries pursuing physics research. This was done by the creation of an International Centre for research in theoretical physics at Trieste, with generous help from the Italian Government. Since the United Nations is an orphan itself—kept starved financially and otherwise by the richer nations—our funds are meagre. Even so we have been able to help around 800 Indian physicists in the 16 years of the International Centre's existence. I must here pay a tribute to the member of our Scientific Council from India—Professor Nag Chaudhuri who is here in the audience, for the generous assistance he has given the Centre, as well as India's University Grants Commission.

But the needs of Indian physics—not to speak of Indian science—are a hundred fold compared to what we can provide. To underline the despair of those who feel they have the spark but that it is being stifled, let me describe to you the early career of Albert Einstein.

There has been no one like Einstein in this country ; perhaps never in the whole history of human thought, so far as physical sciences are concerned. Certainly there never has been anyone so singly responsible for so much revolutionary thinking in physics.

But how easily may Einstein have been lost, particularly if he had been born in a developing country. At the age of fifteen he was summoned by one of his teachers at the Luitpold Gymnasium in Munich : the teacher expressed the wish that Einstein leave the School. In Einstein's words "To my remark that I had done nothing amiss, he replied only, "Your mere presence spoils the respect of the class for me." This was a reference to Einstein's independence of thought.

At the age of sixteen and a half, Einstein wished to enter the Zurich Polytechnic. He took the Entrance Examination for Engineering and, fortunately for physics, he failed. A year later, he succeeded, but by now he had given up all thought of becoming an engineer. Einstein graduated from the Zurich Polytechnic in the year 1900 ; he sought university positions, but failed "for I was not in the good graces of my former teachers." Einstein maintained himself by finding temporary jobs, performing calculations, private tutoring at 3 francs an hour, and school-teaching. In November 1901 he submitted a research paper as a thesis for a doctoral degree—a necessary passport for university teacher. Although this paper—his second—was accepted by the prestigious journal, Annalen der Physik, the University of Zurich rejected it as inadequate for a Ph.D.

According to his biographer, Banesh Hoffmann, Einstein felt himself sinking hopeless in the quagmire of a world that had no place for him. A poignant episode during 1901 will illustrate what I mean. In 1901 Einstein's first research paper had been published in Annalen der Physik. Einstein sent a copy of this to Professor Wilhelm Ostwald—later a Nobel Laureate—with the letter :

"Since I was inspired by your book on general chemistry . . . I am taking the liberty of sending you a copy of my paper. I venture also to ask you whether perhaps you might have use for a mathematical physicist . . . I am taking the liberty of making such a request only because I am without means . . . ."

In spite of a second reminder there was no response from Ostwald, nor from Professor Kamerlingh-Onnes in Leiden to whom Einstein sent a similar request.

At this stage, in Banesh Hoffmann's words, a beautiful event occurred in Einstein's life of which he knew nothing. Einstein's father, an unsuccessful merchant, in ill health, and a stranger to the academic community, took it upon himself to write to Professor Ostwald. Here is his letter :

"I beg you to excuse a father who dares to approach you, dear Professor, in the interest of his son. . . My son Albert Einstein is 22 years old. . . Everybody who is able to judge praises his talent . . . My son is profoundly unhappy about his present joblessness, and every day the idea becomes more firmly implanted in him that he is a failure in his career and will not be able to find the way back again. . . Because, dear Professor, my son honours and reveres you. . . I permit myself to apply to you with the plea that you read his article. . . and hopefully that you will write him a few lines of encouragement so that he may regain his joy in life and his work. . .

My son has no idea of this extra-ordinary step of mine".

There was still no reply. Eventually as is well known, in 1902 Einstein did find a job at the Swiss Patent Office—first as Probationary Technical Expert, Third Class and then with a promotion to Engineer, Second Class. It was here—far from adequate scientific libraries far from the stimulating research atmosphere of a conventional university physics department, snatching precious morsels of time for his own surreptitious calculations, which he guiltily hid in a drawer when footsteps approached, Einstein produced his revolutionary papers on quantum theory of light and the unification of space and time, during 1905. And during all this time, he was without the precious Ph.D. "I shall not become a Ph.D. . . the whole comedy had become a bore to me". Thus wrote Einstein, for a second attempt at this degree made in 1905 had also failed. A third attempt did eventually succeed but by then he did not need the Ph.D. any more for he had already become famous.

I have told this story in detail ; for the simple reason that every one of the discouragements he suffered from are a norm for a scientist in a developing country. My heart bleeds for those who suffer from these. Some of them are here to-day in this audience. It is our bounden duty to ameliorate these disabilities, by making personal sacrifices —like the sacrifices being made by Mother Theresa and her magnificent helpers in this city.

We must do our utmost to ensure that not only physical hunger, but also intellectual and scientific hunger, is satisfied in our midst. But now addressing myself to those who feel that they are being stifled by lack of encouragement in science—let me, as my final word, point out

MARXISM AND REVOLUTION 100 YEARS AFTER MARX

Paul M. Sweezy

It has often been pointed out that Marxism brought together three great intellectual currents—German philosophy, French socialism, and English political economy. To each it brought its own interpretations and modifications, but its originality consisted not so much in innovations of this kind as in the whole it fashioned from these elements. This was new, unprecedented, and earth-shaking in its implications.

The key to understanding this achievement, I believe, is to be found in the 1845 "Theses on Feuerbach," especially the one-sentence Eleventh (and last) Thesis : "The philosophers have only interpreted the world ; the point however is to change it".

Needless to say, this is not a denial of the need to interpret (understand) the world ; it is simply an affirmation that the purpose of understanding is to lay the basis for change. Marxism thus from the very beginning had a dual character as a science of society and history on the one hand and as a project to change the world for the better on the other.

On the face of it there is no incompatibility or conflict between these two elements, and yet long experience has shown that yoking them together in a coherent and effective practice is far more difficult than Marx and Engles, in their youthful enthusiasm, could have imagined.

By the time Marx jotted down his "Theses on Feuerbach" in the spring of 1845, he and his lifelong partner had already begun the task they had set themselves, i.e., to understand the world and at the same time to develop a strategy for changing it. Their method was to examine and criticize their own intellectual formation while widening their perspective by taking into account the most advanced thinking in other traditions, especially English political economy and French socialism. They had already completed, or were about to complete, two works which, while heavily preoccupied with criticizing their German contemporaries, set forth in preliminary form their own way of understanding the world (historical materialism) and the means by which it could and would be changed (proletarian revolution). These works, with their subtitles, written by both Marx and Engels, were The Holy Family, or Critique of Critical Criticism, and The German Ideology : Critique of the Latest German Philosophy in Its Representatives Feuerbach, B. Bauer and Stirner and of German Socialism in its Various Prophets. In the next two years they were to complete three more works—The Condition of the Working Class in England (Engels), The Poverty of Philosophy (Marx), and The Communist Manifesto (Marx and Engels).

These five works were the product of a period of intense intellectual activity by two young men, both still in their twenties, whose world-view was in the process of taking shape. With the publication of the Manifesto on the eve of the revolutions of 1848, their ideas were broadcast far and wide to become the ideological programatic basis of Marxism as we have known it ever since. This is not to imply that nothing important was added by their later work. Of course much of great importance was added. But the lines of the later work were laid down, and the basic conclusions reached were retained and strengthened. Historical materialism, greatly refined and elaborated for the case of capitalism, remained the key to understanding the world ; and proletarian revolution the means of changing it. And while from the beginning Marx and Engels believed that the goal of revolution would be communism, they came increasingly to recognize the necessity of a transitional stage which Marx in 1875 called the first phase of communism and his followers called socialism. Neither Marx nor Engels provided a definition, let alone a blueprint, of this transitional stage, but scattered passages in their writings allow us to attribute to them the view that it was primarily a negation of capitalism which would develop its own positive identity (communism) through a revolutionary struggle in which the proletariat would remake society and in the process remake itself.*

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* This view was already clearly implied in the Third Thesis on Feuerbach : "The materialist doctrine that men are products of circumstances and up-

A crucial issue in Marxism was and is the connection between historical materialism and proletarian revolution. As Marx and Engels saw it in their early works, the answer was quite straightforward and unproblematic. The industrial revolution was perceived to be sweeping over England and other relatively developed areas of Western Europe with its seemingly ineluctable consequences in terms of the spread of machinery and the factory system and the relative as well as absolute growth of the proletariat, i.e., the propertyless wage-earning working class. Pretty clearly, the empirical model of this process was provided by Engels' Condition of the Working Class in England, dealing with the bellwether English textile industry ; and the analysis of the forces propelling it forward were succinctly laid down in the Manifesto. The revolutionary character of the fully developed proletariat was deduced from its existential situation and forcefully stated as early as The Holy Family :

> Because the abstraction of all humanity, even the appearance of humanity, is practically complete in the fully developed proletariat, because the living conditions of the proletariat represent the focal point of all inhuman conditions in modern society, because the human being is lost in the proletariat, but has won a theoretical consciousness of loss and is compelled by unavoidable and absolutely compulsory need . . . to revolt against this inhumanity—all these are the reasons why the proletariat can and must emancipate itself.

This view of the relation between understanding the world and changing it was never basically changed by Marx or Engels during their lifetime. Theoretically it was greatly elaborated and deepened in Marx's magnum opus Capital ; and practically it was the premise of their work in the International Working-men's Association (the First International) and their role as consultants and advisers to socialist parties and movements right up to the time of Engels' death in 1895. The

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bringing and that, therefore, changed men are products of other circumstances and changed upbringing, forgets that circumstances are changed precisely by men and that the educator must himself be educated.... The coincidence of the changing of circumstances and of human activity can only be conceived and rationally understood as revolutionizing practice."

revolutionary mission of the proletariat was thus a central tenet of the Marxism which Marx and Engels passed on to their followers.

How has this belief in the proletariat as the bearer and agent of revolutionary change stood up in the light of the experience of the hundred years since Marx's death ? The answer has to be, not very well.

To begin with, in the advanced capitalist countries there have been no revolutions despite expectations derived from the theory of capitalist development expounded in Capital. The main reason for this is pretty clearly that after 1850, i.e., about the time Marx and Engels completed the five works alluded to above, the development of the proletariat took a different turn from the foreseen in the passage quoted from The Holy Family*. The real wage (value of labor power) gradually increased ; and the class-struggle, though continuing and often at a high pitch of intensity, increasingly took as its goal from the workers' side an improvement in their condition within the framework of capitalism rather than the revolutionary overthrow of the system. Thus even before the end of the nineteenth century Marxist parties and trade unions which continued to proclaim their devotion to revolutionary goals were in fact transformed into reformist organizations.

It is not to be supposed that Marx and Engels were blind to the gap between their early image of the proletariat and the reality they saw around them as the years and decades passed. As one among many examples that could be cited, Engels wrote in a letter to Marx of April 8, 1863 : "All revolutionary energy has faded practically entirely from the English proletariat, and the English proletarian is declaring his complete agreement with the rule of the bourgeoisie". Moreover, Marx and Engels conducted an intense and unrelenting struggle against what they considered the lack of revolutionary understanding and dedication in the working-class movements with which they were associated, most notably the First International and the German Social Democratic party. The most famous of all programmatic statements by Marx, the Critique of the Gotha Program, was in fact a sustained—and as it turned out unsuccessful—polemic against the wishy-washy, non-revolutionary draft program prepared for the unification of the then-existing two large German workers' parties in 1875.

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*A secondary reason, which can only be mentioned in passing, is that the middle strata between the workers and the capitalists, which the Manifesto saw as disappearing, actually expanded both in variety and numbers and in this way prevented the proletariat from becoming the preponderant majority of the capitalist social structure.

For reasons which we cannot attempt to analyze here, however, these reiterated negative assessments of, and feelings about, developments in the working class after 1850 left no trace on the Marxism which the founding fathers bequeathed to their followers. The Communist Manifesto and Capital remained the authoritative texts of the movement, and the leading figures of the Second International (founded in 1888), with Kautsky at the top of the list, continued to pay lip service to the doctrine of proletarian revolution. It was only in 1914 when the national parties making up the International split among and within themselves over support of their respective sides in the war that the revolutionary potential of the Marxist movement in the advanced capitalist countries was revealed as a myth.

Paradoxically, it was out of this conjuncture that the myth received a new lease on life. Lenin, as the leader and chief spokes-person of the Russian Bolsheviks and himself a thoroughly orthodox Marxist, denounced the leaders of the backsliding socialist parties and factions, not as legitimate representatives of their respective working classes, but as betrayers of an international proletariat with the characteristics attributed to it by Marx and Engels from the beginning. This position was soon enormously strengthened by the success of the Bolsheviks in the Russian Revolution of 1917. The Bolshevik party was indeed a proletarian party in the classical Marxist sense. At the decisive moment the dedicated revolutionary faction within the leadership won out over the waverers, resulting in the victorious seizure of power. The experience seemed to confirm the analysis which Lenin had been arguing for since the splits of 1914, i.e., that what prevented the proletariat from carrying out its revolutionary mission was a leadership which had been detached from its proletarian roots and had come to represent not the working class as a whole but a small upper crust (the "aristocracy of labor") which had in effect gone over to the side of the capitalists.

This interpretation and the aristocracy-of-labour theory on which it was based became the orthodoxy of the Communist movement which emerged in the aftermath of the First World War and the Russian Revolution. The new Communist parties in the advanced countries would assume the leadership of their respective working classes, come to the rescue of the beleaguered Russian revolutionaries, and put the train of history back on the tracks from which it had been temporarily derailed by the misleaders of the Second International and its reformist member parties.

It did not work out that way. With few exceptions the Communist parties in the advanced countries failed to gain the majority support of their own working classes ; they were unable to stop the advance of fascism during the 1930s ; and none came close to achieving power. Moreover, during the long period of capitalist expansion after the Second World War, those Communist parties which had been relatively most successful—the so-called Eurocommunist parties—grew gradually more reformist. Today, a hundred year after Marx's death, it is impossible to make out a reasonable case for the view which had been for so long at the very heart of Marxism, i.e., that the proletariat in the advanced capitalist countries is destined to be the agent of revolutionary change.*

To many this not unnaturally seemed a fatal flaw in Marxism which must in due course result in the movement's decline and fall. And looked at from the vantage point of the advanced capitalist countries where Marxism had its origin and enjoyed its early successes, this expectation has indeed received support from the actual course of events. There the working classes have tended to turn away from Marxism or to transform it into a project of reform within the framework of capitalism rather than what it originally was, a project to overturn and replace the system itself. As Marx and Engels would have been the first to insist, a Marxism stripped of its revolutionary essence is a contradiction in terms with no reason for being and no power to survive.

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* Naturally this does not preclude the possibility that at some unforeseeable time in the future changed conditions may necessitate reconsideration of this conclusion. But Marxism deals with historical realities, not with futurology.

And yet Marxism has not only survived but in the hundred years since Marx's death has become more truly universal in its appeal and acceptance than any other body of ideas, secular or religious, in the history of humanity. How can we explain this seeming paradox ?

To answer this question we must shift the focus of attention from the advanced capitalist countries of Western Europe (for obvious historical reasons the main preoccupation of Marxism in the nineteenth century) to the global capitalist system which, though deeply rooted in the age of mercantilism from the sixteenth through the eighteenth centuries, came into its own as a decisive force shaping the various parts of the whole and their relations to each other only in the late nineteenth and early twentieth centuries.

Though never denying or ignoring the supra-national character of capitalism, Marx did not attempt to elaborate a theory of the functioning of the system as a whole ; and differing interpretations of scattered passages bearing on the subject are possible. Here we need only note that what had become the orthodox Marxist view by the end of the nineteenth century in effect bypassed the whole problem by the simple device of generalizing the development of capitalism in the advanced countries, as worked out in the Manifesto and Capital, to the whole world. In this view, a sequence of stages that had unfolded or presumably was in the process of unfolding in the West would have to be repeated in the rest of the world ; feudalism, burgeois revolution, industrialization, class polarization (bourgeoisie vs. proletariat), proletarian revolution, socialism. The shift in focus from advanced capitalist countries to global capitalism was thus made to appear a purely quantitative problem requiring no theoretical amendments or revisions.

Gradually, however, and by steps which need not concern us here, it became clear that this approach was totally inadequate. The spread of capitalism from the center to the periphery did not take the form of a simple extension. Rather the centre used its superior economic, political, and military power to subordinate the periphery and impose upon it economic relations and institutional structures designed to benefit the center and its ruling groups. A very high and frequently rising rate of exploitation was the established in the periphery, with the resulting surplus product being shared between local elites, the ruling classes in the center, and to a certain extent the working classes of the center.*

The other side of the coin of course was what has been called the "development of underdevelopment"—impoverished workers and peasants, massive unemployment, agriculture and industry oriented to export and luxury markets, relatively few new jobs for rapidly expanding populations. Here in the periphery the spread of capitalism has created a mass of human beings who conform closely to Marx and Engels' description of the "fully developed proletariat" in The Holy Family, those whose "living conditions represent the focal point of all inhuman conditions in modern society."

Is it any wonder that the spread of capitalism into the periphery has been followed by a spread of Marxism ? And when we consider that the periphery of capitalism now extends into practically every nook and cranny of the globe, there is no longer any mystery about the universal appeal of Marxism. The new proletarians in the original Marxist sense are the rapidly increasing masses of dehumanized humanity in what is now popularly called the Third World.

These developments do not call into question the nature of Marxism as conceived by its founders in the 1840s. It remains a dual project, to understand the world and to change it. But they have so vastly altered the dimensions and complexity of both tasks as to cast doubt on a whole range of ideas and beliefs that have grown up over the years, often attaining the status of quasi-religious articles of faith. Clearly, the time has come when Marxists must seek to reinterpret the world and in the process criticise the old interpretations on which they have been brought up. Here we can do no more than indicate a few of the important issues that should find a place on what may be called a Hundredth Anniversary Agenda.

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* The fact that part of the wealth sucked out of the periphery trickles down to the workers of the center is a reason additional to those cited above for the increasingly reformist character of the latter after the middle of the nineteenth century.

(1) There is no doubt about the capacity of the new proletariance to provide the motive power for revolutionary change. It has been demonstrated in a whole series of revolutions in the Third World since the Second World War. And in retrospect we can see that the Russian Revolution, despite the role of the industrial proletariat in its early stages, was in essence much closer to a Third World revolution than to the kind of proletarian socialist revolutions originally envisaged by Marxism as taking place in the advanced capitalist countries of the centre. As the world capitalist crisis deepens and hits the countries of the periphery with special force, further Third World revolutions seem inevitable. Marxists need to know much more about them—what features they have in common, how they differ because of varying historical backgrounds, particular locations in the global system, and differing natural endowments. Without knowledge of this kind, our understanding of the world in the last years of the twentieth century can only be described as hopelessly deficient.

(2) When it comes to changing the world for the better, there are many problem areas, among which the following must be assigned high priority. What kind of societies are the revolutions of the twentieth century actually creating ? To what extent are they socialist in the classical Marxist sense, i.e., societies in transition toward communism (a classless and stateless society with changed attitudes toward work and distribution according to need) ? To what extent are they novel forms of state capitalism ? To what extent are they new class societies with their own characteristics and laws of development ? Depending on answers to these questions, Merxists will have differing views of the potential role of these post-revolutionary societies in revolutions yet to come, and of what kind of lessons can and should be drawn from their experiences to date.

(3) History has demonstrated that the revolutionary potential in the capitalist system, at least up to the present and for the visible future, lies in the periphery and not in the center as was formerly taken for granted by Marxism. But this does not mean that the center is any less in need of revolution than the periphery ; the two are inextricably tied together and in the long run must share the same fate. Marxism

is therefore not irrelevant to the center, even if it suffered a long decline thereafter the middle of the nineteenth century. What Marxism in the center urgently needs is a rebirth based on the new understanding of the history of capitalism's expansion into the periphery, and on a reassessment of the role of revolutionaries during a period which may turn out to be measured in generations rather than years or decades when the conditions for successful revolutions are nonexistent. In part what this requires is evidently that Marxists in the center should cure themselves of the disease of imperialist arrogance and racism to which most of them have been exposed since birth, and at the same time sincerely accept the implications of the strong probability that from now on they are and will be revolutionary followers rather than leaders. One such implication is to do everything in their power to frustrate the global counter-revolutionary efforts of their own ruling classes. Further, it should hardly be necessary to add, Marxists should unremittingly fight to protect the interests—social and cultural as well as economic and political—of workers and other victims of capitalism not only because it is the right thing to do but also because in the long run it is the best way to win masses of people to the revolutionary cause.

The history of twentieth-century revolutions has uncovered a hitherto unsuspected Marxist anomaly, namely, the tendency of revolutionary leadership espousing Marxism to transform themselves into ruling elites separated from and standing above the masses who actually fought the battles of the revolution. When this split occurs, we have the absurdity of a ruling oligarchy rationalizing and justifying its rule in the name of Marxism, a quintessentially revolutionary doctrine. As shown by the experience of the Soviet Union and the Eastern European countries, most recently and notably Poland, the tragic consequence of this anomaly is the total discrediting of Marxism in the eyes of the masses.

Perhaps it will be said that this really not an anomaly at all. Can a revolutionary leadership be expected to abandon its Marxism when it achieves its goal ? To put the question this way is to betray a profound misunderstanding of Marxism. The goal of a genuinely revolutionary leadership is not to seize power. That may be necessary at some stage of the struggle, but it can be at most an incident—perhaps a very important one, but still only an incident—in pursuit of the real goal which is the creation of a decent human society. Marxism calls it communism, and implicity recognizes that it can only be approached, never attained. That is why a Marxist leadership, to be true to itself, has as its goal not only revolution but uninterrupted revolution. Marx and Engels understood this. So did Lenin. as anyone familier with the struggles of his years after the seizure of power well knows. But the revolutionary leader who understood it best and articulated it most clearly was Mao Tse-tung.

After his death Mao was repudiated by the Chinese Communist Party, and Marxism in China, as in the Soviet Union, has at least temporarily been debased to the status of a ruling ideology. But the Marxism of Marx and Engels, of Lenin and Mao, lives on and will continue to provide the inspiration for the expansion of humanity's greatest emancipatory movement.

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New Trends in Kushāṇa Studies

B. N. Mukherjee

The field of studies in Indian history in the last two or three decades has been marked with ramification of researches. Fruitful attempts are being made to trace the cultural history—material as well as spiritual. Several scholars have strived for correlating archaeological data and literary testimonies to unravel the mystery of the early historic age of India. Causes and effects of many events or of several phenomena have been judged and different periods of history have been characterised or christened on the basis of economic tenets or political philosophy. All these developments should be welcome, if history is looked upon as a record of man's achievements in all spheres of life and if truth is considered as revealable through discussions.

Discussions have, however, till now failed to solve the vexed question of periodisation of Indian history. A period of early India (particularly from the 6th century B.C. onwards) is still known to historians by the name of its supreme political force. One of such periods is called the age of the Kushāṇa empire. The general importance of this era in the political and cultural history of early India is well-known. So we may perhaps profitably list the recently known facts about this age and discuss the new trends in researches in its history.

The area for collecting data for reconstructing the history of the period has considerably widened in the last three decades with the identification of the language used in coin-legends by Kanishka I (on the great majority of his coins) and his successors and also in several documents found in Afghanistan, Northern Pakistan and the Soviet Central Asia. The discovery of an inscription (now found in three versions) at Surkh-Kotal (Afghanistan) and some other pieces of information have helped scholars to establish that the language concerned was a middle Iranian one. The Greek script was used for writing it. W. B. Henning named it Bactrain. There are indeed references in cèrtain sources to Bactrian (Bāhlika) language. The problems of the Bactrian documents of the Kushāṇa age are being solved with the gradual increase of our knowledge of the structure and vocabulary of this language. The fact that the coin-legends of the Kushāṇa from a date in the reign of Kanishka I onwards were written almost exclusively in Bactrian shows that to them it was more important than any other language of the empire. So it is expected that Bactrian inscriptions will help us in coming years in reconstructing the Kushāṇa history.

Kushāṇa king V'ima Kadphises and the year 279 are mentioned in the Bactrian portion (inscribed in the Greek script) and in the Prakrit portion (inscribed in the Kharoshṭhī script)[1] in a triscriptual and also a trilingual (?) record on a rock at Dasht-e-Nawur (Afghanistan). The third section of the document, written in an undeciphered script and in an unknown language (?), is apparently datable to the Kushāṇa age. Inscriptions written in the same language and script and perhaps at least partly datable to about the same period have been found in a few other places (Ai Khanum, Surkh-Kotal, Khalchayan, Chatyn-Rabat, Tekkuz-tepe, Kara-tepe, Issyk, etc.). Attempts are being made to decipher the script appears to be a combination of Kharoshṭhī, Aramaic and a few Greek letters. It is expected that, with the decipherment of this script, a new type of data will come to our help in writing the history of this period.

Apart from these, recently discovered inscriptions in Kharoshṭhī and Brāhmī have enhanced our knowledge of the period concerned. The most significant of them is the Kamra inscription of the year 20 (?) of Vāsishka. Again, recognition of the fact that the Kushāṇas were referred to as Bactrians in several Greek, Latin and Syriac writings, has led a number of scholars to evaluate these afresh in order to cull information on the Imperial Kushāṇas and their empire. Thus known as well as newly discovered records have in recent decades considerably increased our knowledge of the Kushāṇa history.

As a result, several dark corners of the Kushāṇa history have been illuminated. The founders of the Kushāṇa empire, as it is well-known, were originally the hsi-hou of the Kuei-shuang which belonged to the Ta Yueh-chih people. The evidence of the *Shi-chi* (ch. 123) the Ta Yueh-chih occupied the territory to the north of the Kuei (Oxus) and also Ta-hsia to the south of that river. Ta-hsia was equated by several scholars with Bactria. This would mean that the Bactrian Greeks, who were ruling in about that period, were ousted by the Ta Yueh-chih. Strabo (XI, 8, 2), however, gave this credit not only to the Tokharians (who were the same as the Yueh-chih of the Chinese sources), but also to the Asioi,, Pasianoi and Sakarauloi. This created confusion in the minds of scholars, some of whom doubted the relevance of Strabo's statement to the period concerned. It has now been shown that Ta-hsia, which included Wakhan, Badakhshan, Chitral, Kafiristan, and the region lying between them, was roughly Eastern Bactria, and that while the Yueh-chih = Tokharoi conquered Eastern Bactria, the other nomadic tribes could have wrested Western Bactria from the Greeks. (See also *Prologus* XLI of the *Historiae Philippicae* of Trogus). This establishes the authenticity of Strabo's statement. (B. N. Mukherjee, *An Agrippan Source—A Study in Indo-Parthian History*, Calcutta, 1969, pp. 70 and 111-113).

It appears from the *Ch'ien Han-shu* and the *Hou Han-shu* that Ta-hsia was divided among the five hsi-hou or yavugas or leaders (of five septs) of the Ta Yueh-chih. One of them was the hsi-hou of Kuei-shuang (Kushāṇa) [Chinese *hsi-hou* has been equated with the Kushāṇa title *yavuga*. The latter may have been derived from Iranian *yam* (to 'lead') "with-*v*-for-*m*-and the regular suffix-*uka*", to be set beside Parthian *ymg* (**yamag*) and Persian *Zamyg* (**Zamīg*), meaning 'leader'. Alternatively, the term concerned may be explained as connected with an Irranian *yavuka* or *yāvuka*, meaning "a troop-leader" (K. Hoffmann *et al.*, *Handbuch der Orientalistik*, vol. IV, *Iranistik*, pt I, *Linguistik*, p. 136 ; *Journal of the Royal Asiatic Society of Great Britain and Ireland*, 1972, p. 107)]. Originally all these hsi-hou were dependent on the central Ta Yueh-chih authority having its court to the north of Oxus. According to the latest findings, the first known independent Kuei-shuang or Kushāṇa ruler was Miaos, who struck tetradrachms and obols in about the second half of the 1st century B.C. He might have extended the Kushāṇa rule even to the north of the Oxus.

Ch'iu-chiu-ch'ueh (or Kujula Kadphises) conquered, according to the *Hou Han-shu,* the rest of Ta-hsia P'u-t'a (Bactra area), Kao-fu (Kabul) and Chi-pin (the main part of which was in the north-western region of the Indian subcontinent including Kāsmīra) (*Kūsmīra* > *Kāsvīr*(*a*) > *Kaspir* > *Chi-pin,* pronounced in Archaic Chinese as *Kiad-pien,* in Ancient Chinese as *Kiai-pien* and in Middle Chinse *Kiei-pyin* < **Kā*(*t*)*s-pīn.* Different varieties of Kujula's coins have been attributed, on the basis of their types, legends and provenances, to Ta-hsia (Eastern Bactria), Western Bactria (or Transoxiana or Ta-hsia), an area to the south-east of the Hindu-Kush, Pushkalāvatī in Gandhāra, Taxila and a territory to the east of the Jhelum (*ASSIPH,* pp. 227-229)

Kao-fu was conquered from An-hsi or the Arsacids (*HHS,* ch. 118). It has now been suggested, following a statement of Justin (XLI, 6) about the overthrow of the Bactrian Greeks by the Parthians (i.e. the Arsacids), that in the Kabul area the Greeks had been ousted by the Arsacids, from whom that region was later snatched away by the Yueh-chih (Kushāṇas). Thus, contrary to the general belief, the Kushāṇas developed from early stages of their history inimical relations with the Imperial Partians and not only with the Indo-Parthians, from whom Chi-pin (including parts of the north-western region of the Indian subcontinent) was conquered.

According to the *Hou Han-shu,* Ch'iu-chiu-ch'ueh (or Kujula Kadphises) was succeeded by his son Yen-kao-chen (or V'ima Kadphises). A recently noticed Kharoshṭhī inscription refers to a son of Kuyula Kataphśā (i.e. Kujula Kadphises) as Sadashkaṇa.

V'ima Kadphises (or Yen-Kao-chen), the son of Kujula Kadphises, aggrandised the limits of the empire at the expense of the Indo-Parthians and also the Imperial Parthians. From the former he conquered the Kandahar area, certain territories up to Mathura and also Shen-tu. The name *Shen-tu* is generally taken to denote the Indian subcontinent. But, as it has now been shown, Shen-tu in question (which was to the south-west (really south-east) of Kao-fu, stretched up to a ocean, and was on a large river) was the lower Indus country. V'ima minted silver coins (bust : Nike) attributable to this area. In Kandahar he re-struck copper pieces of the Indo-Parthians (bust : Nike). "The King sacrificing at an altar" device, which was introduced in Kushāṇa coinage by V'ima, was based on the identical device on coins of the Imperial Parthian ruler Gotarzes II (A.D. 38-51). It has been inferred from its evidence that V'ima might have used this coin-type in an area which had earlier experienced the circulation of the Arsacid coins.

The term *Kadphis(es)* which appears (in different recognisable forms) in various sources along with the names of Kujula and V'ima, has for a long time been taken as a part of name or surname of the father as well as the son and as one of the features which distinguish them from the members of the family of Kanishka, who did not use it. The word *Kadphis(es)*, however, might well have been merely a *biruda* or a title, since it could have been derived from Old Iranian *Kāta-paisa,* meaning "of honoured form". So the absence of this title from the coin-legends of Kanishka I and his successors does not necessarily assign them to a group separate from that of Kujula and his son. On the other hand, a definite relationship between these two group is indicated by the recently discovered Kamra inscription of the year 20 (?) of Vajheshka or Vāsishka, a member of the so-called group of Kanishka I, which describes him (Vāsishka) as belonging "to the branch of the Great King Kala Kabisa Sachadhramaṭhita", identifiable with Kujula Kadphises. We may here add that it has already been pointed out that the cumulated evidence of two inscriptions found at a place at Mat (near Mathura) [one alluding to the erection of a temple and an effigy of Vima=V'ima, (to whom is attributed the title *Tākshuma=Takshomo,* an epithet of V'ima in the Bactrian version of the Dasht-e-Nawur record), and another referring to the same temple as that of the grandfather of Huvishka] has been interpreted to suggest that Huvishka was the grandson of V'ima Kadphises. Thus, contrary to the belief generally held by scholars for more than a century, the line of Kujula did not probably end with the rule of his son V'ima. It continued through Kanishka I and his successors.

The Kamra inscription of the year 20 (?) of Vāsishka records the digging of a well on the occasion of the birth of Kanishka. This Kanishka can easily be identified with Kanishka, son of Vajheshka

(Vāsishka), mentioned in the Ara inscription of the year 41. This shows that Kanishka of the Ara inscription was born in the year 20 of the Kanishka Era, and so was certainly different from Kanishka I, the founder of that era.

Kanishka II, whose known dates are years 41 and 30+X (?), was according to some scholars, a co-ruler of Huvishka (year 26-60). Scholars have also observed that Vāsishka, the father of Kanishka II, could himself have been a co-ruler of Kanishka I (year 2 or perhaps year 1-year 23), if his name was corrupted into *Vāskushāṇa* (Vāsishka+Kushāṇ) in a Sanchi inscription of the year 22. This hypothesis has now been strengthened by the evidence of the Kamra record, which refers to the reign of Vāsishka and is dated in the year 20 (?) of the Kanishka Era. Since Kanishka I is considered have ruled from the year 1 to the year 23 of that reckoning, Vāsishka (year 20-year 28) must have been for some time a co-ruler of Kanishka I. It appears that in the Kushāṇa empire the heir apparent often used to become a co-ruler of the supreme or senior ruler.

Numismatic researches have already established that Vāsudeva (I) (year 64 or year 67-year 98) was followed on the Kushāṇa throne by one Kanishka (III) and another Vāsudeva (II), Kanishka III has been identified with Kaneshko mentioned in a Bactrian inscription on a seal impression found in the Peshawar district (Pakistan).

The problem of determining the extent of the Kushāṇa empire has engaged attention of several scholars in recent times. Chinese and Tibetan sources (like the *Hou Han-shu, Ta chuang-yen lun ching, Fu fa-tsang vin yuan chuan,* and *Ma-ming-p'u-sa-shuan* and the Tibetan treatise *Li-yul-gyi-lo-rgys*) have been interpreted to suggest Kanishka I's conquest of Sāketa and his hegemony over Pāṭaliputra, and inscriptional evidence has been adduced to indicate his rule over the Banaras, Kosam and Sahet-Mahet areas. But we are still in dark about the rule of his successors to the east of Mathurā. The exact relationship between the Kushāṇas and the family of Chasṭana (of the Deccan and W. India) has not yet been clearly defined. We have, however, now some idea of the northern and western limits of the empire. Chinese sources have been cited to show that Kanishka's empire included Ts'ung-ling or the

Pamirs and was contiguous to Su-le or Kashgarh. A Bactrian epigraph, found at Airtam near Termez in Uzbekistan (USSR), refers to the reign of Huvishka and alludes to Kushāṇa rule in Transoxiana. The *Hou Han-shu* (ch. 118) indicates that by c. A.D. 125 the Ta Yueh-chih (or the Kushāṇa) territory stretched up the neighbourhood of P'u-li or the Tashkurgan region in the north-east and to a locality to the immediate east of Mu-lu or Merv (in Turkmenistan of the USSR) in the north-west. It appears from the Naqsh-i-Rustam record of the Sasanian king Shāpūr I that even on the eve of the downfall of the Kushāṇa empire it stretched in the north up to the borders of K'sh (=Kashgar), Sogdiana (or Swgd) (to the north of the Oxus) and Sh'sh ('st' n) (=Tshkent). So the western division of the Kushāṇa empire incorporated, at least in certain periods of its history, the major part of Afghanistan (excluding Seistan), a portion of the easternmost section of Sinkiang (China) and parts of the territory of the Soviet Central Asia to the immediate north of the Oxus.

The Naqsh-i-Rustam inscription, dated to c. A.D. 262, clearly includes within the empire of Shāpūr I "the Kushāṇa country as far forward as Paskibouron or Pshkbwr (=Peshawar) and up to the borders of K'sh, Sogdiana or Swgd and Sh'sh ('st' n)". This evidence and the testimonies of the Kushāṇo-Sasanian gold coins (based on a class of gold specie of Vāsudeva II) and of Al-Ṭabarī (about the submission of a Kushan king to the Sasanian monarch Ardashīr I, the father of Shāpūr I) have now established beyond doubt that the Sasanians were primarily responsible for the downfall of the Kushāṇa empire in about the second quarter of the 3rd century A.D. There is really nothing to substantiate the pet theories of some Indian scholars suggesting that the Yaudheyas dealt "the first great blow to the Kushāṇas" or that they made a common cause with Mālavas and the Ārjunāyanas against the Kushāṇas, or that the Kushāṇa empire collapsed before the onslaught of some Indian powers. The fact is that the Kushāṇa empire died when it was compelled to submit to the Sasanids. The Indian tribes and other local chiefs, who might have danced over its corpse, could have only facilitated its burial or cremation by about or shortly after the middle of the 3rd century A.D.

No discussion on the trends in researches in political history of the Kushāṇa empire can be completed without referring to the problem of fixing the date of accession of Kanishka (I). Scholars of various nationalities still vie with one another in suggesting dates ranging from the 1st to the late 3rd century A.D. But certain ways to the solution may be detected in the maze of theories. Since Kadphises II copied a coin-type (king sacrificing at an altar) of the Assacid king Gotarzes II, who ruled from A.D. 38 to 51, Kanishka I, who reigned after Kadphises II, should not be dated before the third quarter of the 1st century A.D. On the other hand, as a century [covering the periods of Kanishka I (1-23), Vāsishka (20-28), Huvisshka (26-60), Kanishka II (30+X—40) and Vāsudeva I (64 or 67-98)] and some more years (covering the periods of Kanishka III and Vāsudeva II) must be placed prior to the submission of the Kushāṇas to the Sasanids in about the 2nd quarter of the 3rd century A.D. or at least before c. A.D. 232, when the Naqsh-i-Rustam inscription of Shāpūr I claimed his authority over Kushānshahr, the beginning of the reign of Kanishka I cannot possibly be assigned to any year after the second quarter of the 2nd century A.D. Results of the Archaeological excavations at Kosam and some other data indicate that at Kosam the Maghas began to rule immediately or shortly after the Kushāṇas and by the year 81, datable to the era of A.D. 78. Since there is no evidence of the rule of the Maghas in the earliest phase of this reckoning, they might have merely continued its use in the area where it had been already known. This era might well have been the era of Kanishka I, since it could have been imported into the Kosam area during the Kushāṇa rule and prior to the advent of the Maghas. All these data favour the hypotheses dating Kanishka I to the fourth quarter of the 1st century A.D. It is indeed very difficult to place the first year of the rule of Kanishka I, the successor of V'ima Kadphises, after the 1st century A.D., if the date of the latter's Dasht-e-Nawur record of the year 279 is referred to the Arsacid Era of 247 B.C. and so to A.D. 32.

Apart from the Kanishka Era, the Kushāṇa empire was familar with two or even three other systems of reckoning. These were the Old Śaka Era of c. 170 B.C., the era of Azes I (perhaps the same

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as the era of 58 B.C.) and the Arsacid Era of 247 B.C. The first two were popular in the pre-Kanishka age and the third was only sporadically used in the western section of the empire (as in the case of the epigraphic document found at Dasht-e-Nawur). The first two systems of reckoning continued to be in use in the post-Kushāṇa period.

During the early days of Indological studies the Kushāṇa territory was looked upon as an Indian kingdom ruled by a batch of non-indigenous (Indo-Scythian ?) rulers. Recent researches point to another direction. According to the *Ch'ien Han-shu* and the *Hou Han-shu,* the territory of the hsi-hou of Kuei-shuang, which formed the nucleus of the empire, was in Ta-hsia or Eastern Bactria. It appears from the *Hou Han-shu* that the capital of the kingdom of Kuei-shung (Kushāṇa) was at Lan-shih (in Ta-hsia). If Moses of Chorene is to be believed, the capital of the Kushāṇas was at Bahl or Balkh in Bactria immediately before their fall. The fact that Kanishka I replaced Greek and Prakrit by Bactrian in his coin-legends, shows that to the Kushāṇas the language of Bactria was more important than other speeches used in the empire. Again, as it has been shown, gold and copper coins of Kanishka I and Huvishka bear on the reverse only those deities who were worshipped by or could have been known to the people of Bactria. Thus Bactria seems to have been the most important area of the Kushāṇa empire. And since the Kushāṇas had under them a substantial portion of Central Asia before entering the Indian subcontinent, their domain should be considered as essentially a Central Asian empire, having its sway extended to different parts of the subcontinent.

What were the driving forces, besides the natural imperial hunger for territory, behind the Kushāṇa thrust towards India ? According to the *Hou Han-shu* (ch. 88 and 118), the Kushāṇas (Ta Yueh-chih) became extremely rich and strong after their conquest of T'ien-chu or Shen-tu (the lower Indus country), which had profitable commercial relations with Ta-ch' in,, i.e. the Oriental possessions of the Roman empire. It has been shown that the Kushāṇas were allured into that territory by the prospects of gain out of this trade. The dependence of the Kushāṇas on the international trade of the age, which is now well-recognised, is further indicated by almost simultaneous end of the direct Kushāṇo-Roman maritime contacts by c. A.D. 150 and the begainning of the deline of the Kushāṇa empire in the reign of Vāsudeva I. A vital alteration in the economic structure of the empire forced the pace of change in the political arena.

Attempts have been made in recent years to find out how far economic considerations prompted political activities of the Kushāṇas in other parts of the subcontinent. We should encourage researches on this line, viz., investigations into the probable economic factors in political or military movements in ancient India, since man's domination over man and country for the love of economic gain is a commonplace of history.

Not only the economic factors in the political history of the Kushāṇas, but also the economic, social and religious conditions of the various peoples of the vast empire have been studied in recent times. Apart from epigraphic and numismatic data found in different regions of the subcontinent, archaeological information gathered from archaeological excavations in Afghanistan, the USSR, India, and Pakistan have been of great help to us. Several well known texts including the *Periplous tes Erythras Thalasses, Book of the Laws of Countries* (by Bardesan), *Geographike Huphegesis* (by Ptolemy), *Ch'ien Han-shu, Hou-Han-shu, Kalpanāmāṇḍtika, Aṅgavijjā,* etc., have been examined for this purpose. It has been established that though industry and trade received great impetus in the context of brisk Indo-Roman commercial transactions, agriculture was not neglected. Traces of large-scale irrigation, datable to the Kushāṇa age, have been discovered in Northern Pakistan, Northern Afghanistan and parts of Soviet Central Asia. Wealth, however, was accumulated in the hands of a class of people mainly on account of their trading or ruling activities. Prosperous trade naturally led to the growth of trading centres and cities. It is interesting to note in this context that archaeological data indicate abandonment or less flourishing conditions of several inhabited sites in Eastern U.P. and Bihar at the end of the "Kushāṇa" level of occupation. This has been explained as the result of a temporary economic decay of these areas since they no longer played important part in India's trade with the west.

Endowments in money, as indicated by epigraphic data, have been considered to suggest that money economy was in a flourishing state. This, however, does not mean that the system of barter was not practised. It has also to be noted, as indicated by a Mathura epigraph of the year 28, that silver coins struck by private agencies were allowed to be circulated in the Kushāṇa empire. In fact, in the Indian subcontinent the Kushāṇas themselves struck silver coins only in the lower Indus area. Their gold and copper coins minted in the days of V'imafi Kanishka (I), Huvishka and Vāsudeva I were meant for circulation throughout the empire. Typologically these cannot be attributed, unlike pre-Kushāṇa coins in India, to different areas. From this point of view the Kushāṇas were responsible for issuing the first imperial coinage of India. Their gold coins, as it has been shown on the basis of different data, were sometimes acceptable to peoples outside India and the empire. This speaks in volume of the international value of the Kushāṇa gold coins.

Big industrialists, traders and rich landlords as well as the emperor, his family, relatives, counsellors and courtiers, army generals, families of rulers and administrators at the central, provincial and local levels should have belonged to the most affluent and privilaged class of the Kushāṇa empire. Birth, (marriage ?), power and wealth seem to have been the most important criteria for becoming a member of this class. A recently noticed Kharoshṭhī record suggests that persons known as Guśura, Stura, Aṇakaya (i.e. those bearing the title Anankaios) and Gahapati formed a part of the nobility of the empire. The evidence of Bardesanes and some other data have been interpreted to suggest that wealth was concentrated in the hands of rich noble families, who were accustomed to lead a loose life and to employ a large number of slaves mainly for domestic purposes. There is, however, no definite evidence to hold, following some Soviet scholars, that the Kushāṇa empire was a slave-owing empire, and to imply thereby that slave labour was a major factor in production in the Kushāṇa empire.[2]

Substantial progress has been made in recent decades in researches in religion and art of the age. Buddhism and, to some extent, Saivism were popular throughout the empire. The Western provinces were familiar, more than the eastern provinces, with the Iranian and Hellenistic cults. It is not known whether Jainism and Vaishnavism, well-known in the Kushāṇa age, had any following in Bactria, the most important province of the empire.

Religious toleration was practised by the Imperial Kushāṇas out of their indifference to various religions or, more probably, out of a sense of political expediency. The dynastic sanctuary of the Imperial Kushāṇas at Mat (near Mathurā) housed Brahmanical deities, while that at Surkh-Kotal in Afghanistan was dedicated, according to one hypothesis, to the cult of Fire.

Excavations at Surkh-Kotal have also enhanced our knowledge of the temple architecture in the western division of the Kushāṇa empire. Similarly excavations at Kara-Tepe, Delbergin, etc., have enabled us to understand the monastic architecture of those areas.

Discoveries made at Airtam, Khalchayan, etc., in the USSR, and several places in Afghanistan have yielded sculptures, stylistic features of which assign them to a school separate from Mathurā, Gandhāra, Parthian, and Hellinistic schools of the age. The sculptured human figures, which are somewhat frontal in treatment, show oval shaped faces with open, somewhat bulging, or half-closed eyes. Their hair is indicated by deep incisions or by curls looking like buttons. Scholars have christened this schools as Bactrian. The emergence of the personality of the Bactrian school is the most significant event in the study of Kushāṇa art in recent years. Scholars have also been able to discern recently features of an Imperial art as betrayed by royal sanctuaries and coinage of the Kushāṇas.

Importance of the Kushāṇa period in the history of the development of Indian iconography is well-known. In recent years a few scholars have attempted to trace outside influences on the concepts and iconic features of several Indian deities like the goddess on lion, Lakshmī, etc.

The Kushāṇa polity has engaged attention of a number of scholars in recent years. The inspiration for the Kushāṇa concept of the divine origin of kingship, as indicated by the use of the title *devaputra* and some other data, has long been traced to Chinese sources. It is now gradually realised that when the Kushāṇas rose to power the important monarchies of their known world (which included the Roman and the Arsacid dominions as well as the Han empire) were saturated with the idea of divine origin of kingship. This the Kushāṇas imbibed and propagated to their advantage. Like the Roman emperors, they also tried to create cults of the empire and the emperor.

The idea of the divine origin of the kingship became so much dominant in the Kushāṇa age that an inscription referred to Vāsishka not only as *Devaputra* (Son of God) but also as Devamanuśa [God (as) Man]. This or a similar idea probably anticipated a trait of kingship in the Gupta period which advocated a king as "God dwelling on earth" (*loka-dhāma-devaḥ*). It is interesting to note that Manu and also the *Mahabhārata* propagated the idea that a king was a deity in human form.

The exalted position of the Kushāṇa king was in consonance with the concept that he was himself (as God) the "Law of the Living World" (*Dom* (*r*) *aata* < *D'm-arta*). This epithet was attributed to Vāsishka in the Karma inscription. Thus the Kushāṇa king was considered as the source of Law governing the created beings.

The nature of the Kushāṇa political structure has been judged in recent decades from different, sometimes diagonally opposite, angles. A certain theory advocates that the political structure of the Kushāṇa empire was characterised by "a hierarchical feudatory system" and that the Kushāṇa administration favoured decentralisation of power. According to another view, the Kushāṇa concept of kingship represented "yet another step in the growth of centralised, imperial state". A third hypothesis suggests that the structure of the Kushāṇa government was an "admixture of both" bureaucratic and feudal elements. Our analysis of relevant data shows that the Kushāṇa government's infrastructure consisted of bureaucratic, military and feudatory elements headed by an absolute or near absolute military monarchy. The empire was expanded and its territorial integrety was sustained by *inter alia* its army.

A careful analysis of the selender data available to us indicates that the Kushāṇa realm consisted of three categories of territories. In the first category were the provinces ruled by Mahākshatrapas and/or Kshatrapas under the direct command of the emperor. Northern divisions including perhaps Bactria (the most important province of the empire), the north-western parts of the Indian subcontinent and northern India up to at least the Banaras area were within such provinces. In the second category there may have been at least one region which is known to have been ruled by the hereditary rulers of the family of Chashṭana, if they are considered to have owed allegiance to the Imperial Kushāṇas for at least a certain period. These rulers enjoyed some sort of autonomy, including the right to strike coins. In the third category we may include some vassal or tributary (or "feudatory ?") states (perhaps in the eastern regions of Kanishka's empire including the area of Pātaliputra, which used to pay tributes to the Imperial government).

Thus the Kushāṇa empire was, like the Arsacid and the Han empires, divided into territories with varying degree of dependence on the central authority. The central authority (as the Kushāṇa royal titles, the royal portraits on coins, dynastic sanctuaries, etc., would show) was eager to propagate the royal right and might. But the Kushānshahr was not a "feudal" state in the sense the term was understood in mediaeval Europe. However, if the term "feud" is taken only to mean a land held on condition of service and if the service to be rendered includes payment of tributes, then there might have been feudal elements in parts of the empire, especially in the territories controlled by tributary rulers. Only those areas might have witnessed a condition envisaged in the theory of "feudalism from above". This theory, propounded by D. D. Kosambi, speaks of "a state wherein an emperor or a powerful king levied tribute from subordinates who still ruled in their own right and did what they liked within their territories as long as they paid the paramount ruler". Perhaps a better term to explain the practice obtainable in parts of the Kushāṇa empire would have been "overlordism", i.e. a system which envisaged "one lord over other lords".

In the administration of the territories under the direct command of the emperor the bureaucrats like the Mahākshatrapas might have played an important role. The term *Chiang-ling,* used in the *Hou Han-shu* to refer to such a provincial ruler, may suggest that he was both a military general and a civil official. (The term *Chiang* may denote a military general, and the expression *ling* may be taken to allude to a civil official). The evidence of the existence of such official titles as

Mahākshatrapa and *Kshatrapa* or *Mahādaṇḍanāyaka* and *Daṇḍanāyaka* in the Kushāṇa administration indicates, as it has been pointed out, the prevalence of a system of graded hierarchy of the same type of officials.

Attempts have been made to trace the legacy of Kushāṇa system in different forms of military and civil administrations of later periods including the age of the Guptas. The administrative set up of Shanshan in Central Asia, as indicated by several Kharosṭhī documents, betrays the knowledge of Kushāṇa royal titles, administrative designations, etc. The prominence given to cavalry in India in the later periods, and the presence of officials like Mahādaṇḍanāyaka and Mahābalādhikṛita in the Gupta age, may be considered as indirect legacies of the Kushāṇa administration. Indian currency system of post-Kushāṇa period, particularly of the Gupta age, felt the impact of the Kushāṇa coinage. Similarly, the influence of Kushāṇa art has been considered clearly discernible in Gupta sculptures, in the Sogdiam murals and reliefs (Pjanjikent, Varaksha, etc.) and in Eastern Turkestan.

It has been clearly recognised that the Imperial Kushāṇas established a multi-lingual and multi-racial empire extending over a vast region of Asia. As barriers to thoughts were removed in this microcosm of the ancient period due to freedom of movement in a very large territory and the consequent growth of commerce, even the geographically and ethnically unrelated peoples found themselves in a position to influence one another. The results of such cultural contacts show that the age of the imperial Kushāṇas was one of the most creative periods in the history of the Orient. International seminars and conferences in the last two and half decades on the Kushāṇa history, including the one held in London in 1960 and the other in Dushanbe in 1968, underline the importance which the present generation of scholar attaches to the study of the period concerned.

It is not maintained that all these studies, seminars and conferences have always helped us in solving the problems of Kushāṇa history. In fact, these have made some of our confusions worse confounded. At the same time it must be admitted that these have opened new lines of research. New discoveries, we hope, may in near future help us in unravelling the remaining mystery of the Kushāṇa empire, cultural as well as political importance of which in the history of the Orient can hardly be overestimated.

NOTES

1. The correct spelling of the name of the script concerned is *Kharostī* or *Kharoshṭī* (and not *Kharoshṭhī*) (B. N. Mukherjee, "A Note on the Name Kharoshṭhī," *Journal of the Asiatic Society,* 1981, vol. XXIII, nos. 1-2, pp. 144-146). We have followed here the generally accepted spelling for the sake of convenience to readers.
2. For a discussion on the socio-economic structure of the Kushāṇa empire see the Presidential Address for Section I in the *Proceedings of the Indian History Congress,* Forty-second Session, Bodhgaya, 1981.

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THE LITHIC INDUSTRIES OF THE TARAFENI AND BHAIRAVBANKI VALLEYS, WEST BENGAL

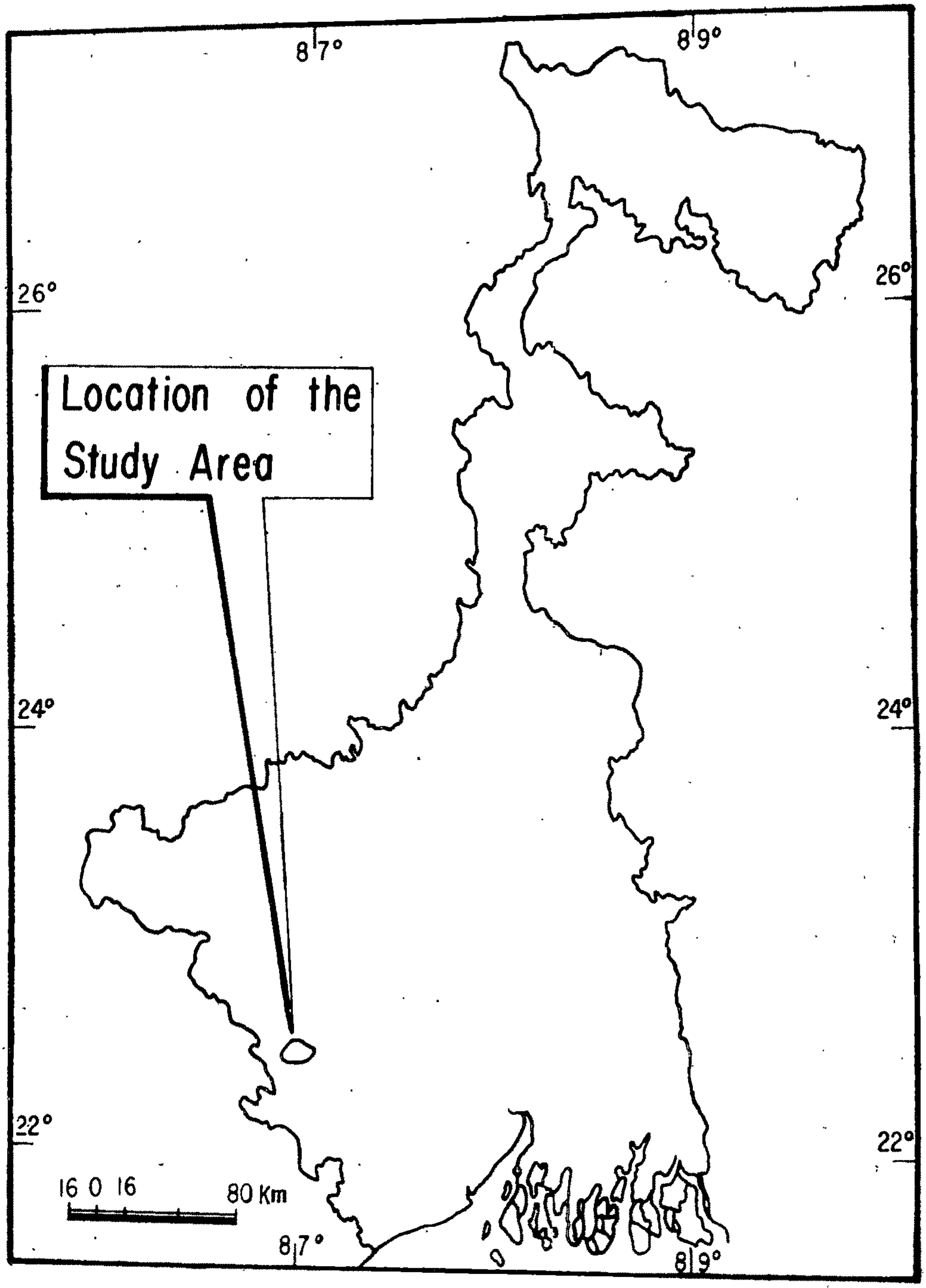
Dilip K. Chakrabarti and R. K. Chattopadhyay

The Tarafeni and the Bhairavbanki form two contiguous river-valleys at the junction of the northwestern part of Midnapur district and the southwestern part of Bankura district, West Bengal (Map-1). The present paper reports the lithic industries of this area found in the course of an exploration by the Archaeology and Museum unit of the Department of History, Delhi University, in the field-season of 1982-83. In the field-season of 1981-82 only one microlithic occurrence and a black-and-red ware site were reported in the Tarafeni valley and no site could be reported along the Bhairavbanki.[1]

The easy way of access to these river-valleys is either from Sildah in Midnapur district or Raipur in Bankura district. If one is based at Sildah one takes the Sildah-Fulkusma road and arrives at the crossing point of the Tarafeni which at this point lies at a distance of about 7 km from the Sildah market. About 2-3 km before this crossing one takes a canal-bank road to the left and reaches the Tarafeni reservoir area. The road passes over the lock-gates and the bridge over these lockgates is an important landmark of the area. From this point one can also take a straight road to Belpahari through the villages of Brahmandiha, Astajuri, etc. Belpahari is about 8 km from this point.

The Bhairavbanki lies beyond Fulkusma, at a distance of about one and a half km on the Fulkusma-Raipur road. There is also a reservoir in the upper reaches of the Bhairavbanki and this can be approached either from Fulkusma through Raspal or from the Bhairavbanki crossing of the main Fulkusma-Raipur road itself.

Both these rivers join each other near the village Hardah in Midnapur district and then the combined stream joins the Kangsavati near Sijua.



MAP 1. Tarafeni and Bhairavbanki.

The Tarafeni Valley

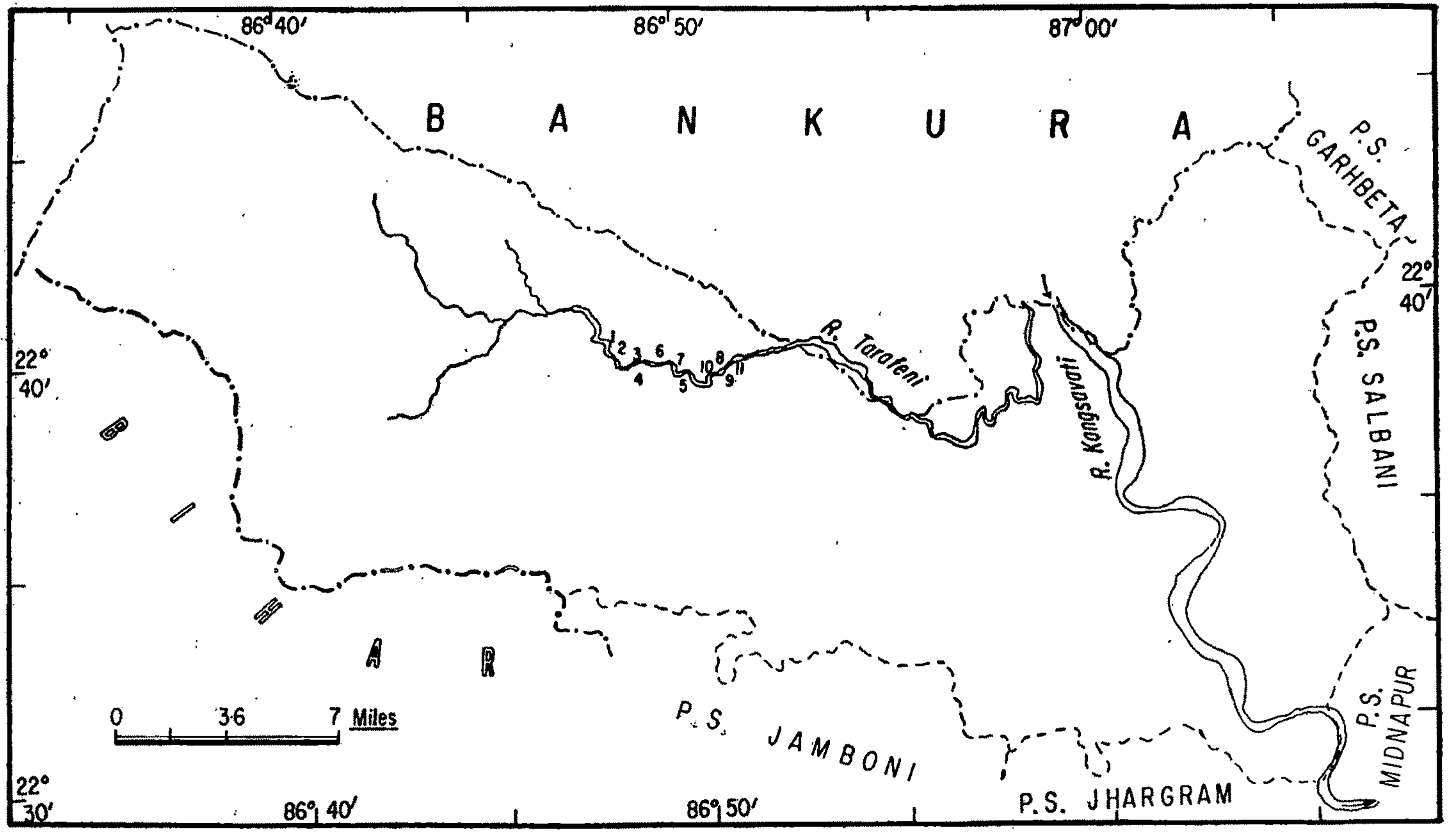
The Tarafeni originates near Phuljhor in the hills northwest of Belpahari and its broad alignment is from the northwest to the southeast. It comes out of the hills within 3-4 km west of the reservoir. West of the Sildah-Fulkusma road crossing the Tarafeni passes through a broken topography— patches of rocky outcrops, lateritic ridges, etc. East of this point the terrain is essentially alluvial and the river fans out in this region. For instance, at Kumardanga, a black-and-red ware site, the bed of the Tarafeni is wide and shows nothing but alluvial deposits in the cliff-sections on either bank.

The Tarafeni Reservoir Bridge Section

From the point of view of prehistoric research the most important strentch of the Tarafeni lies within 1 km downstream (or possibly a little more) of the Tarafeni reservoir bridge. The following section is well-exposed :

Surface Alluvium
Upper Silt
Loose Gravel
Lower Silt
Cemented Gravel

The total height of the section is on the average about 6 m. The cemented gravel shows in places a depth of 1-2 m. It is highly cemented, and from the generally reddish colour of the deposit it appears that some ferruginous agency was responsible for this cementation. However, there are also some lime concretion patches. The cemented pebbles are mostly rounded and vary from medium to small in size. The comparatively loose second gravel seems to contain only small-sized pebbles and nodules and, as far as we have been able to ascertain during the limited time available to us, is exposed only in patches, although over an extensive area. Its thickness is lesser than that of the cemented gravel. Both the lower and upper silts tend to be reddish in colour. The thickness of the upper silt is in places more than 2.5 m. The lower silt shows an invariably lesser thickness. The surface alluvium constitutes only a thin cover at the top.


86° 40′
86° 50′
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22° 40′
22° 40′
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86° 40′
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B A N K U R A
P.S. GARHBETA
P.S. SALBANI
P.S. MIDNAPUR
P.S. JHARGRAM
P.S. JAMBONI
B I H A R
R. Tarafeni
R. Kangsavati
1
2
3
4
5
6
7
8
9
10
11
0
3·6
7 Miles

Map 2

Two lower palaeolithic specimens were obtained *in situ* from the cemented gravel and another specimen was found loose on the surface of this gravel. The specimens of the subsequent industries were also obtained but none of them was recovered *in situ*. It was clear, however, that they came from the upper parts of the section.

Sites

The following data on sites are arranged serially below : serial number, name, location, nature of the industry or industries found and mode of occurrence. Map-2 shows their location on an outline map of the river valley.

1. *Tarafeni Reservoir Bridge* (TRB)—within 1 km (or a little more) downstream of the bridge, Binpur P.S.—lower palaeolithic, middle palaeolithic, upper palaeolithic, microlithic—2 lower palaeolithic specimens found *in situ* in the cemented gravel, the rest from the eroded cliff and surface.
2. *Kechanda* (KCD)— north bank of the river, Binpur P.S.—microlithic—eroded surface.
3. *Jamdahari* (JDR)— north bank of the river, Binpur P.S.—microlithic—eroded surface.
4. *Kushmora* (KSM)—southern bank of the river, Binpur P.S.—microlithic—eroded surface.
5. *Jambani* (JMB)— southern bank of the river, Binpur P.S.—microlithic—eroded surface and gullies.
6. *Rangpur* (RGP)—north bank of the river, Binpur P.S.—microlithic—eroded surface and gullies.
7. *Banshgar* (BSG)—north bank of the river, Binpur P.S.—microlithic—eroded surface and gullies—some apparently late mediaeval ruins nearby.
8. *Hijla* (HJL)—south bank of the river, Binpur P.S.—microlithic—eroded surface and gullies.
9. *Enthela* (ETL)—south bank of the river, Binpur P.S.—microlithic—a hill slope coming down to the river-bank.
10. *Kantharpal* (KTP)—north bank of the river, Binpur P.S.—microlithic—eroded surface and gullies.

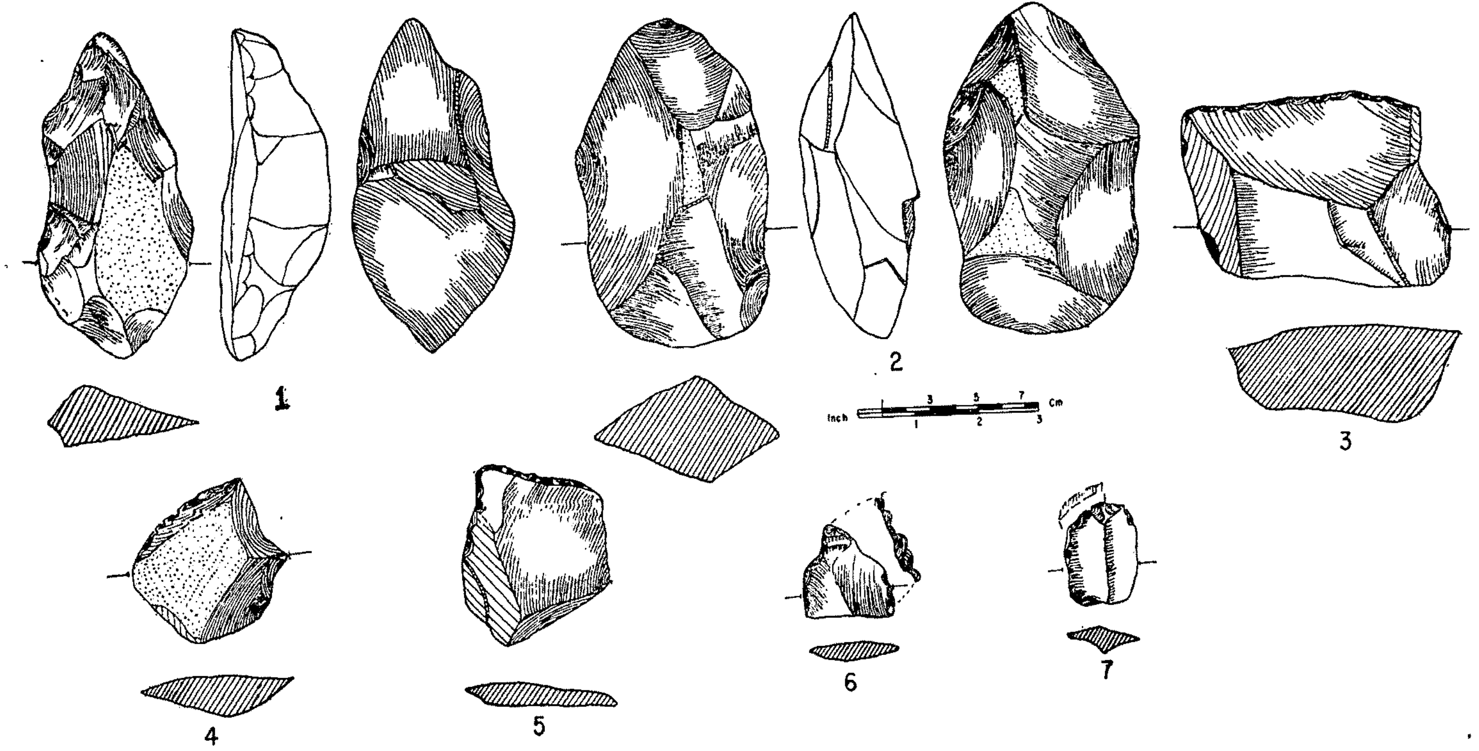


Fig. I

11. *Dumurkonda* (DMK)—south bank of the river, Binpur P.S.—microlithic—eroded surface and gullies.

Industries

Lower Palaeolithic

All the four specimens come from Site 1. There are 2 bifaces, 1 cleaver and 1 retouched flake.

Figure I, 1 : biface length 14.7 cm, breadth 6.9 cm, thickness 4.9 cm—woodfossil—highly rolled and patinated—found *in situ* in the cemented gravel. Made on flake, it is an elongated and pointed specimen. The dorsal surface shows a centrally running ridge from which the major flakes have been taken. There are small retouchings on the lower right lateral edge. The ventral surface is mostly flat, comprising the original detached surface and its right lateral edge shows a sinuous line.

Figure I, 2 : biface, *l* 13.7 cm, *b* 8 cm, *t* 4.8 cm—a greish stone—rolled and to some extent patinated—found loose on the surface of the cemented gravel. It retains pebble cortex, particularly on the ventral surface. Both the surfaces suggest abruptly removed flakes. Interestingly enough, one of the flake scars on the ventral surface is in the shape of a blade bed.

Figure I, 3 : cleaver, *l* 10.6 cm, *b* 9.5 cm, *t* 4.3 cm—possibly quartzite—heavily patinated—found *in situ* in the cemented gravel. Made on a roughly rectangular heavy flake, it shows on the dorsal surface an originally slopping surface which intersects with a number of retouchings on the ventral surface to form the cleaver edge.

Figure I, 4 : retouched flake,*l* 7.1 cm, *b* 5.7 cm, *t* 1.5 cm—quartzite (?)—rolled and patinated—found on the surface in the lower part of the section. The flake retains the original cortex on the dorsal surface. There are retouchings on the lateral edges on the ventral surface.

Middle Palaeolithic

There are two clear specimens, both from site 1 and both found loose in the upper part of the section. In addition, there are a few flake/blade fragments which seem to belong to the middle palaeolithic industry.

The length-range of these flake/blade fragments is 6—4.2 cm.

Figure I, 5 : convergent side scraper, *l* 7.4 cm, *b* 6.1 cm, *t* 2.3 cm —fine-grained brownish quartzite (?). It is made on a roughly triangular piece of flake. The striking platform and the point of impact are clear on the ventral surface. The cutting edge on the dorsal surface has been obtained by detaching two large flakes on two sides. The working edge is retouched both by minute (on the right side) and abrupt (on the left side) retouches. The ventral surface does not bear any evidence of retouching except that the tip of the point (the tip of the right lateral edge) has been strengthened by taking off two small flakes. The lateral edge has been retouched only on the dorsal surface which also bears the original cortex.

Figure I, 6 : point, *l* 4.2 cm, *b* 3.8 cm, *t* 1 cm—greenish chert. This is a fragment of a bifacially worked point on a blade. The retouchings on the pointed border are fine and contiguous. There are retouchings on the lateral borders as well.

Upper Palaeolithic

There is only one specimen (Site 1).

Figure I, 7 : end-scraper, *l* 4.4 cm, *b* 3 cm, *t* 1.1 cm—greenish quartzite (?). This is made on a typical upper palaeolithic blade with a midrib running through the middle of the dorsal surface. The anterior portion bears fine retouchings. The striking platform and the point of impact are clear on the ventral surface.

Microliths

The site-wise distribution of microlithic artifact-types is as follows :

(1) *Fluted core* : TRB (16),KCD (1), KSM (1), JMB (1), BSG (1), ETL (1). Total 21 (percentage out of the total microlithic artifacts of 181 specimens, 11.60%.

(2) *Core-trimming flake* : TRB (13), JDR (3), JMB (2), RGP (2), HJL (4), ETL (1), DMK (4). Total 29 (16.02%).

(3) *Core-trimming blade* : TRB (13), KCD (1), JDR (1), KSM (1), RGP (2), HJL (3), KTP (3), ETL (1). Total 25 (13.81%).

(4) *Parallel-sided blade* : TRB (20), KCD (1), JMB (1), RGP (6), HJL (10), KTP (10), DMK (1). Total 49 (27.07%).

(5) *Core/core fragment* : HJL (1), ETL (2), DMK (3). Total 6 (3.31%).

The total in the preceding debitage-group is 130.

(6) *Obliquely blunted blade* : TRB (2). Total 2 (1.10%).

(7) *Lunate* : TRB (1), JDR (1), JMB (1), ETL (1), DMK (1). Total 5 (2.76%).

(8) *Burin* : TRB (7), KCD (1), JDR (1), KSM (2), KTP (2), ETL (2). Total 15 (8.28%).

(9) *Point* : TRB (1). Total 1 (.55%).

(10) *Side-scraper* : JMB (1), BSG (1), ETL (1). Total 3 (1.65%).

(11) *End-scraper* : TRB (1). Total 1 (.55%).

(12) *Retouched blade* : TRB(3), KCD (1), KSM (1), RGP (1), HJL (3), KTP (2), ETL (1), DMK (6). Total 18 (9.94%).

(13) *Borer* : KSM (1), JMB (1), BSG (1). Total 3 (1.65%).

(14) *Retouched core* : HJL (1), DMK (1). Total 2 (1.10%).

(15) *Notched blade* : BSG (1). Total 1 (1.55%).

The total number of finished specimens is 51.

The following table gives the range of length, breadth and thickness of the measured artifact-types in cm :

	Length	*Breadth*	*Thickness*
Fluted core	4.6—2.4	2.6—2.1	2.3—1.1
P. S. blade	5.4—1.4	2.4— .9	.9— .3
Ob. B. blade	2.3—1.4	.7— .4	.4— .2
Lunate	3.3—2.6	1.8—1.6	1.1— .6
Burin	3.5—2.6	3.5—1.5	2.1—1.5
Point (1 specimen)	4.7	2.8	.9
Side-scraper	3.4—2.5	2.2—1.6	1.1—1
End-scraper (1 specimen)	2.4	2.1	1.6
Notched blade (1 specimen)	3.1	2.4	1
Borer	3.3—3.2	3 —1	.8— .6
Ret. blade	5.7—3.2	2.4—1.9	1.2—1.1
Ret. core	2.9—2.7	1.9—1.4	1.5—1.3

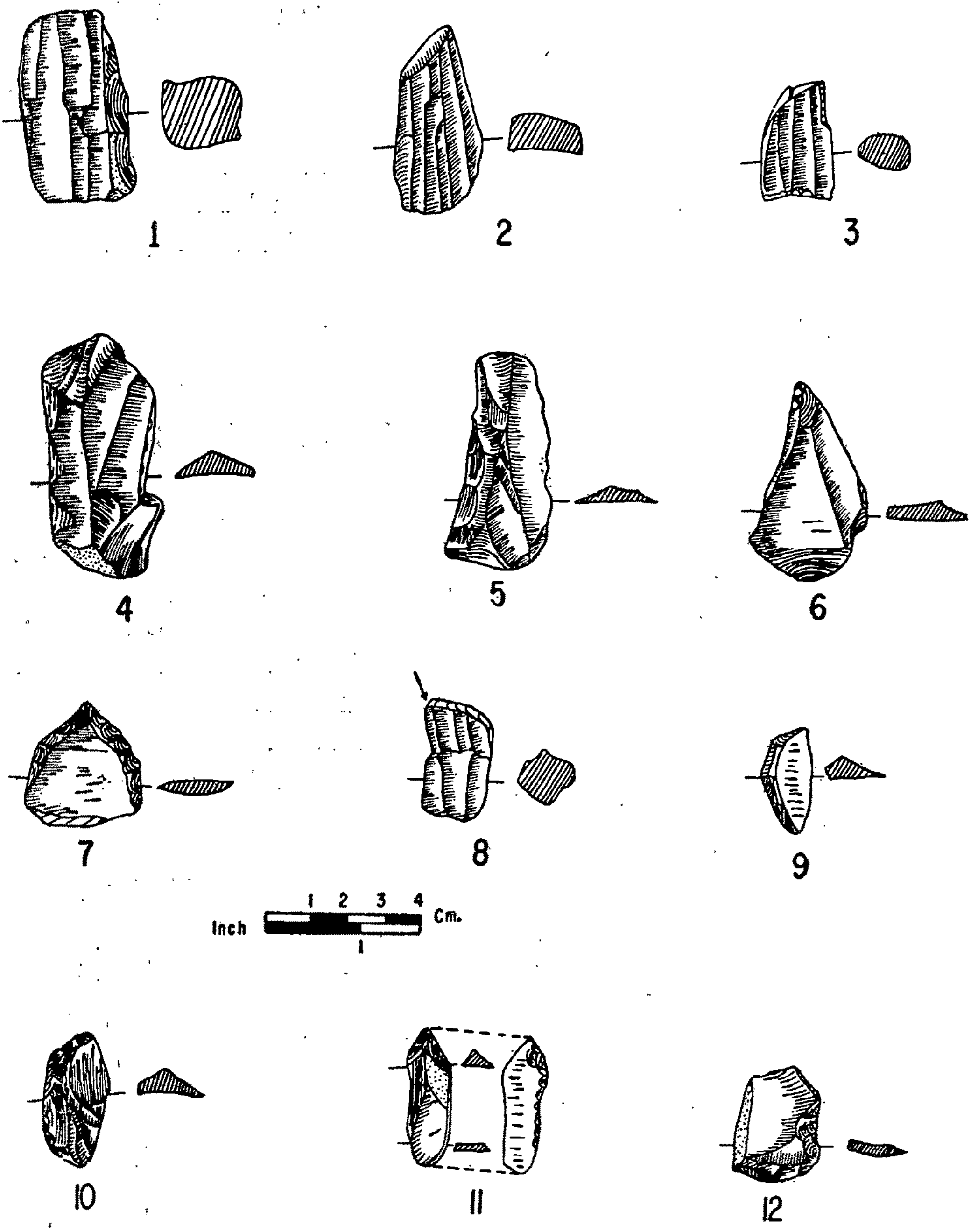


FIG. II

Figure II illustrates the typical specimens. The raw material is mostly quartz, quartzite, greyish and blackish chert and occasionally crystal quartz. The debitage group is dominated by parallel-sided blades (-9) which in this case are very shallow, narrow and thin. These are, of course, without retouches, but could well have been used for various undefined purposes. Fluted cores are generally cylindrical with narrow blade beds. There are also some shallow and thin fluted cores, which means that as cores they have been exhausted. The burins are made mostly on fluted cores and bear only one burin spall. The specimens with multiple burin spalls are limited in number. The dihedral angles are generally well-prepared. The lunates are well-prepared and show carefull retouchings. The scrapers in the assemblage bear a minimum amount of retouch on the scraping borders. The points are bifacially worked. One of the borers is made on a narrow blade and possesses a thin, flat and elongated butt.

The Bhairavbanki Valley

In its source the Bhairavbanki has two channels, both rising in the hills in the southeastern part of Ranibandh Police Station, Bankura district. These channels meet near the village Katro near Fulkusma. West of Fulkusma the river flows through a broken topography but to the east of Fulkusma the topography is by and large alluvial.

It has not yet been possible to isolate a specific prehistoric section along the Bhairavbanki. In this area one is dealing entirely with surface occurrences.

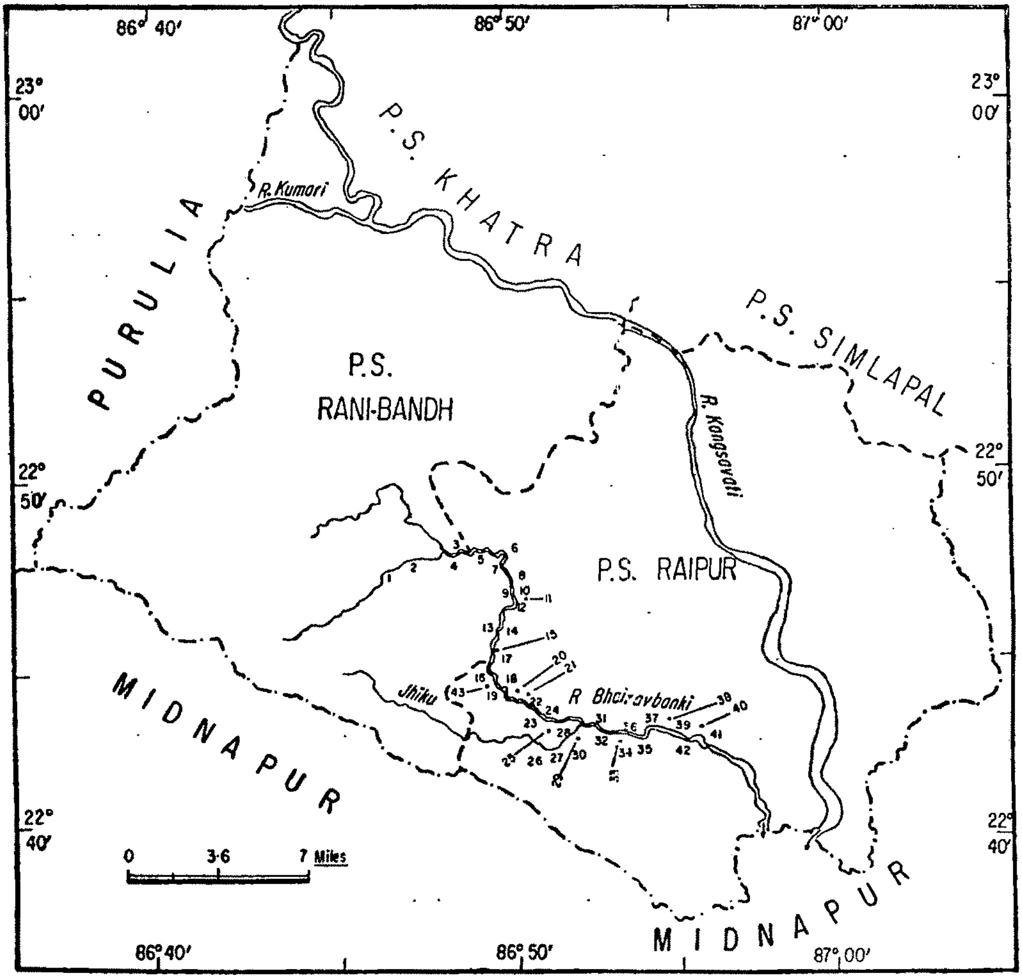
Sites

The data on sites comprise (1) serial number, (2) name, (3) location, (4) nature of industry or industries found and (5) mode of occurrence. Map-3 shows their location.

1. *Sindri-am* (SDR)—Ranibandh P.S.—south bank of the river—microliths—eroded cliff and gullies.
2. *Huangkhana* (HNK)—Ranibandh P. S.—south bank of the river —microliths—eroded surface of the river-bank.
3. *Katro I* (KTR I)—Ranibandh P.S.—north bank of the river, near

the Katro village—microliths—eroded surface and gullies.

4. *Katro II* (KTR II)—Ranibandh P.S.—south bank of the river—lower palaeolithic implements and microliths—eroded surface and gullies.



MAP 3

5. *Dhankura* (DHK)—Ranibandh P.S.—south bank of the river—lower palaeolithic and middle palaeolithic implements—eroded surface and gullies.

6. *Dhega-am* (DHG)—Raipur P.S.—about 1 km away from the river-bank—microliths—eroded surface and gullies.
7. *Dhobakacha* (DBK)—Ranibandh P.S.—south bank of the river —microliths—eroded surface and gullies.
8. *Turubandh* (TRB)—Raipur P.S.—north bank of the river—microliths—a hill slope on the bank of the river.
9. *Madankata* (MNK)—Ranibandh P.S.—west bank of the river which at this point flows north-south—microliths—eroded surface and gullies.
10. *Bansinala* (BSN)—Raipur P.S.—junction of a local *nala* and the Bhairavbanki—microliths — eroded surface and gullies.
11. *Nekrapacha* (NPC)—Raipur P.S.—away from the river-bank—microliths—eroded lateritic surface.
12. *Pali* (PLI)—Raipur P.S.—east bank of the river—microliths—a hill slope on the river-bank.
13. *Jatadunri* or *Jatadumur* (JTD)—Ranibandh P.S.—west bank of the river—microliths—a hill slope on the river-bank.
14. *Guragari* (GRG)—Raipur P.S.—near the Bhairavbanki reservoir —microliths—eroded surface and gullies.
15. *Bhairavbanki reservoir* (BBR)—Raipur P.S.—near the reservoir —microliths—eroded surface and gullies.
16. *Garpahar I, II and III* (GRP)—Raipur P.S.—western side of the river. There are three clusters at a distance of 1-.5 km from one another. GRP II suggests upper palaeolithic whereas GRP I and III are microlithic. The occurrence is on the hill slopes of the area.
17. *Kuchaipal* (KCP)—Raipur P.S.—north bank of the river—microliths—eroded surface and gullies.
18. *Ramchandrapur* (RCP)—Raipur P.S.—north bank of the river—microliths and neoliths—eroded surface and gullies.
19. *Raspal* (RSP)—Raipur P.S.—south bank of the river—microliths and neoliths—eroded surface and gullies—two microlithic clusters within .5 km distance.
20. *Kirtandanga* (KTD)—Raipur P.S.—north bank of the river—microliths—eroded surface and gullies.
21. *Magra* (MGR)—Raipur P.S.—north bank of the river—micro-

liths—eroded surface and gullies.

22. *Ladsol* (LDS)—Raipur P.S.—north bank of the river—microliths and neoliths—eroded surface and gullies.
23. *Girolbani* (GRB)—Raipur P.S.—southern bank of the river—microliths—eroded surface and gullies.
24. *Gopalpur* (GPP)—Raipur P.S.—north bank of the river—microliths—eroded surface and gullies.
25. *Baragari* (BRG)—Raipur P.S.—north bank of the river but away from the river bank—microliths—eroded surface and gullies.
26. *Barapaya* (BRP)—Raipur P.S.—south of the river but away from the river-bank — microliths — eroded surface and gullies.
27. *Gurgara* (GGR)—Raipur P.S.—south bank of the Jhiku, a tributary of the main stream—microliths—eroded surface and gullies.
28. *Thakurbari* (TKB)—Raipur P.S.—south bank of the river, near the confluence of the Jhiku and the Bhairavbanki—microliths and neoliths—eroded surface and gullies.
29. *Bordanga* (BRD)—Raipur P.S.—south bank of the river—microliths and neoliths—eroded surface and gullies.
30. *Fulkusma* (FKS)—Raipur P.S.—south of the river but away from it—microliths—two microlithic clusters within a distance of 1 km —also neoliths.
31. *Sagarchak* (SGC)—Raipur P.S.—near the confluence of the Jhiku and the Bhairavbanki—microliths and neoliths—eroded surface and gullies.
32. *Jemradanga* (JRD)—Raipur P.S.—south bank of the river—microliths and neoliths—eroded surface and gullies.
33. *Patgara* (PGR)—Raipur P.S.—south bank of the river—microliths and neoliths—eroded surface and gullies.
34. *Krishnanagar* (KSN)—Raipur P.S.—south bank of the river—microliths—eroded surface and gullies.
35. *Baburdanga* (BBD)—Raipur P.S.—near KSN, south bank of the river, but a little away from it—microliths—eroded surface and gullies.
36. *Chapapal* (CPP)—Raipur P.S.—north bank of the river—microliths and neoliths—eroded surface and gullies.

37. *Dhekikata* (DKT)—Raipur P.S.—north bank of the river but away from the river bank—microliths—eroded surface and gullies.
38. *Jugladanga* (JLD)—Raipur P.S.—north bank of the river—microliths and neoliths—eroded surface and gullies.
39. *Garhkulia* (GHK)—Raipur P.S.—north bank of the river—microliths—eroded surface full of lime concreted nodules.
40. *Kumarar* (KMR)—Raipur P.S.—north bank of the river—microliths—eroded surface and gullies.
41. *Nepura* (NPR)—Raipur P.S.—north bank of the river—microliths—eroded surface and gullies.
42. *Junbani* (JBN)—Raipur P.S.—south bank of the river—microliths—eroded surface and gullies.
43. *Lempo-am* (LMP)—Raipur P.S.—south bank of the river—microliths—hill slope.

Industries

Lower Palaeolithic

The three specimens come from two sites, Katro II (site number 4) and Dhankura (site number 5).

Figure III, 1 : site no. 5—biface on an elongated piece of core—quartzite—heavily rolled and patinated. The dorsal surface shows three flake scars on the right lateral edge. There is also a flake scar on the butt end. The ventral surface is roughly worked, leading to a roughly sinuous line on the left lateral edge. *l* 13 cm, *b* 6.5 cm, *t* 3.5 cm.

Figure III, 2 : site no. 4—biface on core (?)—*l* 13.1 cm, *b* 8.2 cm, *t* 5.1 cm—quartz—rolled and lateritic staining—roughly ovate—worked on both sides.

In addition there is another specimen of biface on milky quartz from the site number 3 but a part of it is broken.

Middle Palaeolithic

Figure III, 3, site number 5, convex side-scraper—*l* 5.9 cm, *b* 4.5 cm, *t* 2.3 cm—quartz—retouching on the convex edge.

Figure III, 4, site number 5, convex side-scraper—*l* 6 cm, *b* 4.5 cm, *t* 2.1 cm—quartz—retouching on the convex edge.

Figure III, 5, site number 5—transverse side-scraper—*l* 5.1 cm, *b* 3.5 cm, *t* 1.6 cm—quartz—retouching on the lateral edges.

Figure III, 6, site number 5, straight side-scraper—*l* 3.9 cm, *b* 3.1 cm, *t* 2 cm—greenish stone—retouching on the straight edge.

Figure III, 7, site number 5—discoid core—*l* 7.8 cm, *b* 6.1 cm, *t* 3.7 cm—brownish fine-grained quartzite.

Upper Palaeolithic

The assemblage from the site number 16 (Garpahar II) is inter-

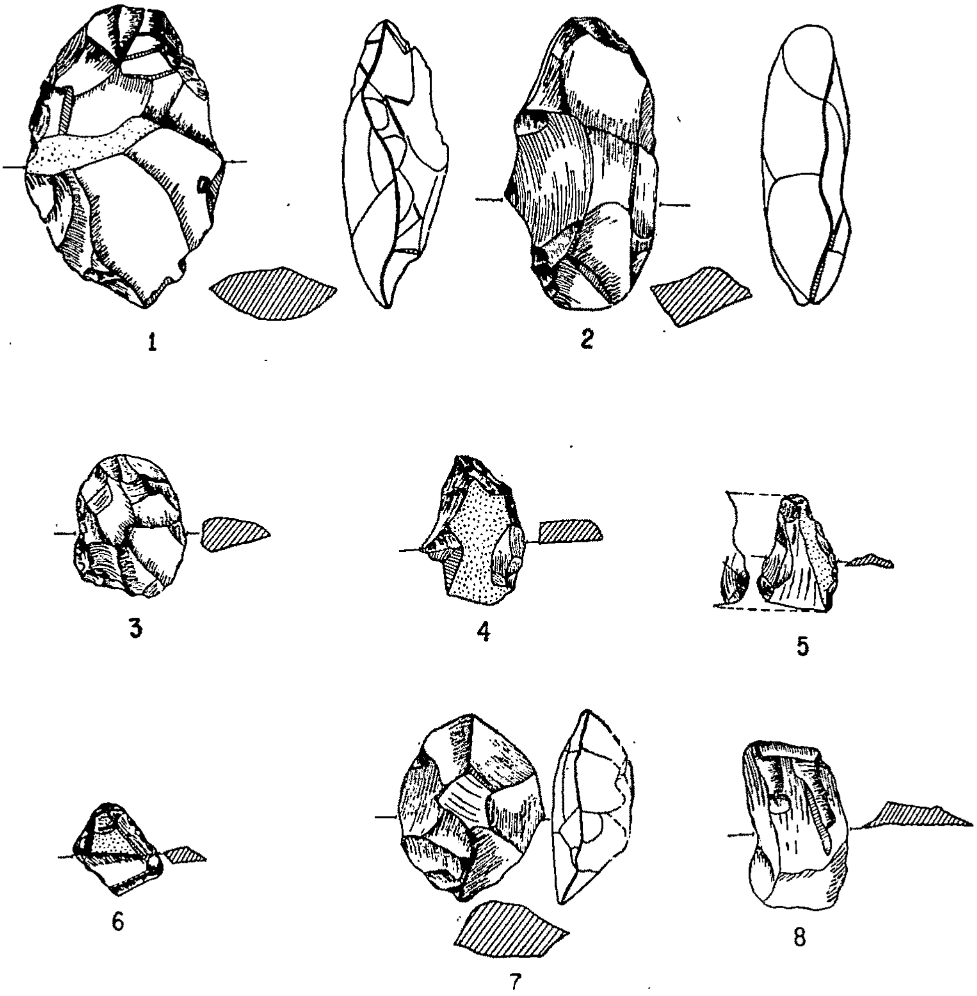


Fig. III

esting in the sense that it may be put in the category of upper palaeoliths primarily because of the size of the blades and the absence of microliths in the cluster. The collection comprises the following specimens : 5 blade/blade fragments (all in a blackish cherty material with streaks of quartz), 1 burin and 1 borer (both in fine-grained quartz). In addition there are two pieces of waste material. The largest piece of blade (Figure III, 8) measures, *l* 7.3 cm, *b* 4 cm, *t* 1.5 cm. The borer measures *l* 5.4 cm, *b* 2.8 cm and *t* 1.2 cm. The burin measures *l* 5 cm, *b* 1.7 cm, *t* 1.2 cm.

Microliths

The site-wise distribution of microlithic artifact-types is as follows :

(1) *Fluted core* : SDR (1), HNK (2), KTR II (5), DHG (5), DBK (4), MNK (1), PLI (3), JTD (4), BBR (1), GRP I (2), GRP III (2), KCP (3), RSP (8), KTD (1), MGR (2), LDS (2), GRB (2), GPP (1), BRG (4), BRP (6), TKB (2), FKM (2), SGC (4), JRD (1), KSN (6), BBD (2), CPP (4), DKT (2), JGD (2), KMR (3), NPR (1), JBN (1), LMP (3). Total 92 (11.71% of the total microlithic artifacts of 785 specimens).

(2) *Core-trimming flake* : KTR I (3), BSN (1), NPC (1), PLI (3), JTD (8), GRG (4), RCP (2), KTD (1), GPP (4), GGR (2), BRD (4), FKM (3), SGC (3), JRD (5), PTG (5), KSN (2), CPP (3), DKT (2), JGD (2), GHK (8), NPR (2). Total 68 (8.16%).

(3) *Core-trimming blade* : SDR (2), HNK (2), KTR I (2), KTR II (3), DBK (2), BSN (2), PLI (24), JTD (4), GRP I (3), GRP III (9), KCP (5), LMP (2), RSP (5), KTD (2), GRB (1), GPP (2), BRG (2), BRP (4), GGR (4), TKB (4), BRD (3), FKM (5), SGC (3), JRD (12), PTG (3), BBD (1), CPP (5), DKT (6), KMR (10). Total 132 (16.81%).

(4) *Parallel-sided blade* : SDR (2), HNK (4), KTR I (2), DHG (14), DBK (1), TRB (8), MNK (2), PLI (6), JTD (15), GRG (3), BBR (3), GRP I (3), GRP III (45); KCP (8), LMP (5), RSP (7), MGR (5), GRB(3), GPP (3); BRP (9), GGR

(4), TKB (4), FKM (8), SGC (4), JRD (10), PTG (3), KSN (7), BBD (5), CPP (7), DKT (7), JGD (4), GHK (4), KMR (5), NPR (1), JBN (1). Total 222 (28.28%).

(5) *Discoid core* : SDR (1), GRP I (2). Total 3 (.38%).

(6) Core/core fragment : PLI (1), LMP (1). Total 2 (.25%).

The total number of debitage specimens is 517, 65.85% of the total specimens of 785.

(6) *Backed blade* : KTR I (1), TRB (1), PLI (1), GRP III (6), GRB (1), BRP (1), FKM (1), TKB (2). Total 14 (1.78%).

(7) *Obliquely blunted blade* : DBK (1), TRB (1), PLI (2), JTD (2), GRP I (2), GRP III (10), KCP (1), LMP (1), RSP (1), GPP (3), BRG (1), BRD (1), FKM (1), BBD (1), JGD (1). Total 29 (3.69%).

(8) *Lunate* : HNK (1), KTR II (1), DBK (2), NPC (1), PLI (1), GRP I (3), GRP III (1), RSP (4), MGR (1), GPP (3), BRG (1), GGR (2), BRD (1), FKM (2), SGC (6), KSN (1), DKT (2), JGD (1), NPR (1), JBN (1) Total 37 (4.71%).

(9) *Burin* : HNK (1), KTR I (3), KTR II (1), DBK (3), BSN (1), PLI (5), JTD (3), GRP I (1), GRP (III) (13, KCP (1), LMP (2), GGR (5), TKB (3), FKM (5), SGC (1), JRD (10), PTG (3), DKT (1), JGD (1), KMR (1). Total 64 (8.15%).

(10) *Point* : KTR I (1), KTR II (1), DHG (2), DBK (1), PLI (3), JTD (1), GRP I (1), KCP (1), RCP (1), LMP (1), RSP (1), KTD (1), GRB (1), GPP (1), BRG (1), BRP (1), GGR (2), TKB (1), BRD (1), PTG (1), KSN (1), BBD (1), CPP (1), DKT (1), GHK (1). Total 29 (3.69%).

(11) *Side-scraper* : MNK (2), LDS (1), GRB (1), BBD (1). Total 5 (0.63%).

(12) *Double-sided scraper* : DHG (1). Total 1 (0.12%).

(13) *End-scraper* : KTR II (1), PLI (2), RSP (1), LDS (1), BRP (1), BBD (1), DKT (1), JGD (1), NPR (1). Total 10 (1.27%).

(14) *Thumb-nail scraper* : KTR II (1), PLI (1), JTD (1), RSP (1), MGR (1), JBN (1). Total 6 (0.76%).

(15) *Notched scraper* : GRB (1). Total 1 (0.12%).

(16) *Borer* : HNK (2), SGC (1), DKT (1), KMR (1). Total 5 (0.63%).

(17) *Knife* : SDR (1), RCP (1), FKM (1), SGC (2), FTG (3), DKT (2). Total 10 (1.27%).

(18) *Triangle* : RSP (1), GHK (1). Total 2 (0.25%).

(19) *Retouched blade* : SDR (2), KTR II (3), DBK (1), TRB (4), BSN (1), NPC (2), PLI (2), JTD (1), GRP III (2), RSP (1), KTD (1), MGR (2), LDS (1), GRB (1), BRP (4), FKM (2), DKT (5), GHK (2), KMR (4). Total 41 (5.22%).

(20) *Retouched core* : KTR II (1), TRB (3), BSN (1), GRP I (2), GRP III (2), KCP (1), LDS (1), JGD (2), BRP (1). Total 14 (1.78%).

The total number of finished specimens is 268.

The following table gives the length, breadth and thickness range of the measured artifact-types in cm :

	Length	*Breadth*	*Thickness*
Fluted core	3.7—2.1	3.1—2	2.5—1.5
Discoidal core	2.8—2.6	2.8—2.6	1.7—1.2
P.S. blade	4.6—1.2	2.7— .6	.7— .3
Backed blade	4.2—1.4	.9— .4	.6— .3
Ob. b. blade	3.8—1.8	1.1— .6	1 — .3
Lunate	3.8—1.2	2.6—1	.9— .5
Burin	6.3—2.2	2.5—1.6	1.7— .4
Point	4.3—2.1	1.2— .9	1 — .2
Side-scraper	4 —2.3	1.7—1	.7— .5
End-scraper	3.2—2.3	2.4—1.2	1.5— .7
T. N. scraper	2.9—1.6	3.1—1.8	2 — .6
Notched scraper	2.8	1.7	.5 (only one specimen)
Borer	4.7—2	3.2—1.3	1.1—1
Knife	3.2—1.7	2.5—1.2	1 — .3
Retouched blade	2.5—2.3	1.2—1.1	1 — .5
Retouched core	3.5—3.1	3.2—2.1	1.8—1.2
Triangle	1.6	.5	.2 (only one specimen)

Figure IV illustrates the typical microlithic specimens. It may be noted that the raw material is mostly quartz, quartzite and cherty mate-

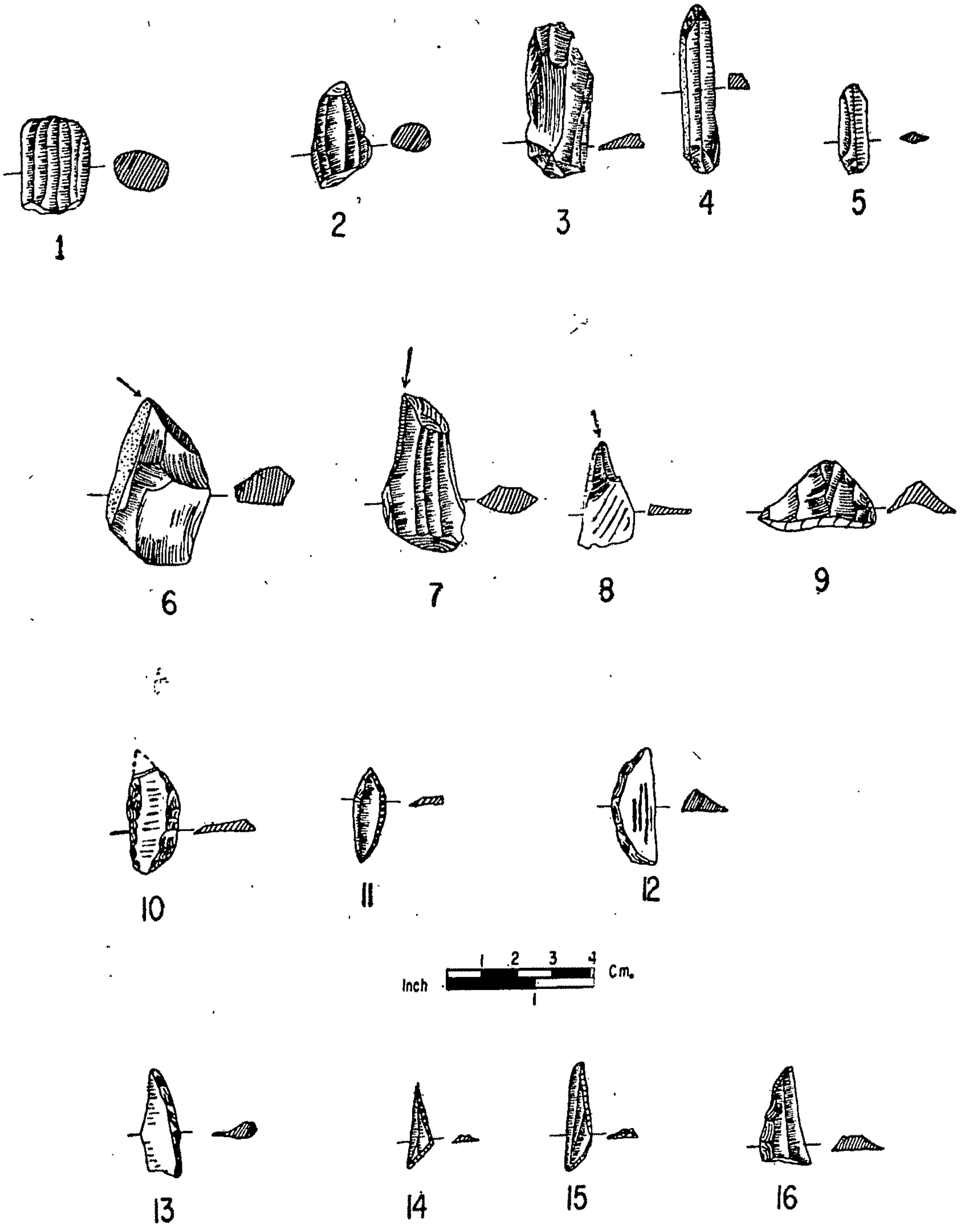


FIG. IV

rial. Further points of interest may be said to be the following : there are 3 flake lunates in the collection, all from GPP. The rest of the lunates in the Bhairavbanki collection is on blade. Among the points there is at least one Azilian type (GPP) and at RSP and PLI there are two Gravettian points (one each). The burins are both on flake and blade and bear both single and multiple spalls. Most of the burins are on fluted cores.

Neolithic Tools (Plate I)

RCP—(1) axe/chisel fragment—greyish stone—reddish silt stain—roughly rectangular block—chipped and pecked convex cutting edge—available *l* 8.6 cm, *b* 6.6 cm, *t* 2.8 cm. (2) Axe—greyish stone—roughly rectangular cross-section—splayed out cutting edge—chipped and pecked—roughly oval, thin butt end—*l* 6.8 cm, *b* 3 cm, *t* 1.2 cm.

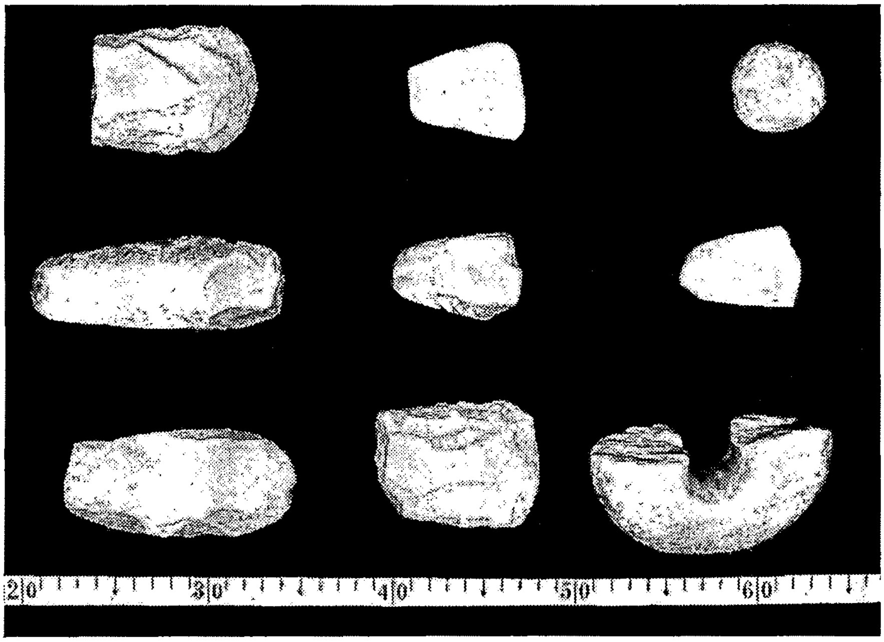


PLATE I.

Neoliths from the Bhairavbanki Valley.

RSP—(1) axe—greyish stone—broad butt end—ground and polished—convex cutting edge—elliptical cross-section—*l* 6.2 cm, *b* 5.1 cm, *t* 2 cm.

LDS—(1) axe/edge fragment—greyish stone—chipped and pecked—thin oval cross-section—*l* 5.3 cm (broken), *b* 3.3 cm, *t* 1.8 cm.

(2) Axe—crude, broken specimen—chipped and pecked—the butt end is narrowed and rounded with a nearly circular cross-section—greyish stone—*l* 9.2 cm, *b* 3.8 cm, *t* 2.5 cm.

(3) Axe—greyish stone—anterior end broken—broad butt end—*l* 3.3 cm, *b* 3.7 cm, *t* 1.4 cm.

TKB—(1) ringstone (fragment)—greyish stone—rough surface—diametre 10 cm, inner diametre 2.8 cm, thickness 2.7 cm.

(2) Axe—*l* 6.9 cm, *b* 4.5 cm, *t* 1.9 cm—greyish stone—broad, rounded butt end—ground surface—slightly damaged working edge.

(3) Axe (small fragment)—greyish stone—breadth at the working edge 5.4 cm, thickness 1.6 cm—the convex working edge is polished.

FKM—(1) axe (fragment)—*l* 8.5 cm, *b* 5.1 cm, *t* 2.9 cm—greyish stone—chipped and pecked—rounded butt end—flat oval cross-section.

(2) Axe (fragment)—*l* 10.1 cm, *b* 5 5 cm, *t* 2.9 cm—chipped and pecked.

(3) Axe (fragment)—*l* 6 cm, *b* 4.6 cm, *t* 1.9 cm—chipped and pecked.

SGC—Axe (fragment)—*l* 4 cm, *b* 4 cm, *t* 1.6 cm—greyish stone—finely polished convex working edge.

JRD—(1) axe—butt end broken—*l* 12.4 cm, *b* 5.9 cm, *t* 2 cm—greyish stone—ground working edge.

(2) Pick (?)—greyish stone—*l* 12.5 cm, *b* 4.9 cm, *t* 2 cm—little evidence of working—the lateral borders seem to have been polished into a pointed end.

PTG—(1) axe—*l* 8.7 cm, *b* 6.7 cm, *t* 3.5 cm—chipped and pecked—basically rectangular chunk of greyish stone—roughly elliptical cross-section.

(2) Axe—(small fragment)—*l* 5.7 cm, *b* 6.7 cm, *t* 3.5 cm—greyish stone.

(3) Axe (small fragment)— greyish stone.

CPP—(1) axe (fragment)—*l* 5.7 cm, *b* 5.6 cm, *t* 1.9 cm—pecked, only the working edge ground.

(2) Axe (small fragment)—*l* 8.5 cm, *b* 5.1 cm, *t* 1 cm—greyish stone—chipped and pecked.

(3) Axe (fragment)—*l* 7.9 cm, *b* 5.6 cm, *t* 1.8 cm—greyish stone—partly ground.

JGD—(1) ringstone—10 cm in longer axis, 8.8 cm in the shorter axis and 3.9 cm in thickness—surface flattish—half of it is broken—made of a kind of sandstone with traces of mica—the edge of the inner hole is polished.

(2) Ringstone (half broken)—diametre 11.9 cm, diametre of the inner hole in its centre is 3 cm, widened to 4 cm at the surface perimetre—thickness 5.4 cm.

(3) Muller—*l* 13.5 cm, *b* 4.9 cm, *t* 3.6 cm—greyish stone—the surface bears peck marks but is otherwise ground.

(4) Bolas stone—diametre 5 cm—peck marks on the surface.

(5) Adze—*l* 6.5 cm, *b* 4.3 cm, *t* 1.7 cm—rounded butt end—thin rectangular cross-section—ground at the working edge.

(6) Axe (fragment)—*l* 5 cm, *b* 3.4 cm, *t* 1.1 cm—greyish stone—thin, rectangular cross-section.

(7) Axe—*l* 5.8 cm, *b* 4 cm, *t* 1.2 cm—pecked all over—thin rectangular cross-section.

The present exploration is significant in the sense that it has fully established the prehistoric potential of the Tarafeni and Bhairavbanki valleys. We have put forward a detailed report which, hopefully, will be useful to all subsequent workers in this area.

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THE CONDITION OF INDIAN EMPLOYMENT : A STUDY INTO THE BRITISH ATTITUDE TOWARDS NATIVE AGENCY DURING THE NINETEENTH CENTURY

Ladlimohon Ray Choudhury

The purpose of the present study is to trace the evolution of the East India Company's employment policy in India. The subject is important in two ways. First, employment of Indians in the higher services of the government was one of the earliest demands of the Indian National Congress. The Congress tactics of agitating against the discriminatory policy of government in matters of employment was to some extent responsible for the growth of national awareness in India. Secondly, the question also represents a cross current of British public opinion. At one time, i.e. during the early period of the Company's rule, the government's policy was to exclude the Indians from all superior offices of the country. The plea was that the Indians were quite unworthy of trust, they were incapable of discharging the duties of responsible offices and hence they should be appointed only in the inferior posts. Cornwallis (1786-95) formulated this policy and the trend thus set in continued for a long time i.e. till the end of the governor-generalship of Lord Amherst (1823-28). But Cornwallis' policy of excluding the *natives* from the key posts of the government of their own country created some administrative hazards. It was felt that the government of a vast country like India could not be efficiently run exclusively by men drawn from the British isles. Arrears in law courts began to increase, revenue collection remained mismanaged, police administration was neglected and in short there was slackness in every spheres of public life. A section of the British administrators (Sir Thomas Munro Holt, Mackenzie and Metcalf for example) in India, therefore, thought that now is the time to change the rigid policy of Cornwallis. They argued that the people of India should be accommodated in larger number in the responsible offices of the state, an expedient they thought essential for the improvement of the country's administration. The Company's government was unable to ignore these demands and consequently some concessions were granted in favour of what was then called the native agency. By a series of Regulations passed during 1803-27 some higher posts in the judicial department (Sadar Amins and Law Officers, for example) were created for the Indians and their power and jurisdiction was also gradually increased. Later some more remunerative offices in the uncovenanted cadre (i.e. offices which were not exclusively reserved for the Europeans like those in the covenanted cadre) such as those like the Principal Sadar Amin, the Deputy Collector and the Deputy Magistrate were all thrown open to the qualified Indians. By the Charter Act of 1833, the rule preventing the entry of Indians into the covenanted services of the government was withdrawn and twenty years after, it was further decided that recruitment in the Indian Civil Service shall be made by means of an open competitive examination in which Indians would be allowed to sit.

It may be noted now that the Indians were not alone to put forward the demand for Indianisation of the higher offices of the state. Inside England the pressure of a section of British public opinion also compelled the government to make large scale concessions in favour of the Indians. Administrative need and most importantly the need for economising the administrative expenditure of the colony was also another consideration which prompted the government to make a gradual revision of the Company's earlier policy formulated by Cornwallis. But the rights which were thus granted to the Indians could not be enforced for a long time. The tragedy of the Indian situation was such that although the people of the soil were given the right of being admitted in the higher services, the condition of Indian employees remained fundamentally unchanged. This can be well understood if one looks into the condition of Indian employment in all its various aspects.

First to consider how far the liberal rules made by the government had opened up the prospect of a better career for the Indians in the government services of the country. Before the introduction of the open competitive examination in 1854, the Indians were not allowed to fill up an office in the covenanted cadre. Their only chance for appointment in the higher offices remained at that time confined exclusively to the uncovenanted services of the state. But even here the Indians could not secure employment in large number. Sir Strafford Northcote complained in 1868, that "not only the covenanted service was in practice an exclusive European stronghold, but in the uncovenanted services also, the proportion of Indians to Europeans was as widening as six to one."[1] A statement issued from the Statistical Office, East India House dated 16 April, 1858, gives the total number of uncovenanted Europeans including Indo-Britons, employed in the several departments of the government.[2] It shows that in 1851 in the General and Political departments of the government their total number were 1,131 as against only 148 Indians, and in 1857 the number of such Europeans including Indo-Britons amounted to 1549 while the Indians occupied only 286 posts in all. The preponderance of European elements in the uncovenanted service, had considerably damped the spirit of the Indians aspiring for government service. But no notice was taken of their grievances and the authorities did not seem to stop their favouritism for the European candidates. In 1861, on Canning's recommendation, the British parliament enacted a measure, Act 24 & 25 Vict., C. 54, which were to validate appointments made strictly not in accordance with the Act of 1793 which forbade the appointment of the Indians in the top remunerative offices of the country. Both Sir Charles Wood and Lord Stanley supported the bill which the latter thought would enable the Indians to occupy higher offices.[3] However, when the Act came actually in operation it was seen that "not Indians but British military officers profited by it".[4] A return of all civil appoinments made under the provision of the said Act reveals that only two Indians were appointed under the Act—Babu Taruck Nath Sen, in the officiating post of Additional Judge, 24-Parganas, and Gopal Row Hurry as Assistant and Sessions Judge of Ahmedabad.[5] It should be also noted here that the number of uncovenanted Indians were considerably large in the judicial department of the government. This was not merely due to the greater aptitude of the Indians in the judicial work, but more accurately because of the growing convictions that the Indians employed in the judicial department could not do any harm to the government or put the British interests to peril.[6]

The pay and other remuneration of the Indian employees including those in the superior cadre of uncovenanted service did not also seem to be commensurate either with the qualification of the incumbents or the amount of labour which they were called upon to discharge. There were of course men like Hara Chandra Ghosh, Kishory Chand Mitra, Nagendra Nath Thakur, etc. who received attractive salary from the government. Thus an Indian was raised to the office of Clerk-Assistant of the Legislative Council on a salary of Rs. 1200/-, another to the third Judge of the Small Causes Court on Rs. 1000/- and a third to the junior police magistracy on Rs. 750/- per month.[7] But these were cases of exception. In general the rule was to keep the Indian employees poorly paid. A report submitted by Gay, the then Deputy Comptroller General of India, gives an idea about the pay structure of Indians serving in revenue departments of N. W. Provinces, Bombay and Madras. It shows that the monthly salary of a deputy collector usually varied from Rs. 250/- to Rs. 800/- in N. W. Provinces, and to Rs. 600/- in Madras, while an Assistant Collector in Bombay had to start from an humble pittance of Rs. 90/- a month. Thus while the highest pay for the Indians in these provinces never exceeded Rs. 800/- per month, those for the Europeans ranged from Rs. 2,250/- to Rs. 2,850/-.[8] The salary for the Indian employees in Bengal was equally discouraging. An account published in a contemporary journal in 1848 shows that there were only 54 men whose salary was between Rs. 400/- and Rs. 750/- per month while there was only one individual to draw Rs. 1,200/- a month. The total number of men in receipt of a salary from Rs. 101/- to Rs. 350/- did not exceed 250 while there were only 793 men to receive more than Rs. 50/- but less than a three figure sum. The bulk of Indian employees (other than village Chowkidars) was estimated at 39,781 and they received less than Rs. 12/- per month.[9]

The Indians had often demanded a revision of pay. Thus the members of the Subordinate Executive Service submitted a petition to the government where they prayed that a deputy magistrate and deputy collector should be paid at the rate of Rs. 400/- per month.[10] The submission of this representation in 1869 shows that their pay must have been lower than that which they prayed for in that year. Lord Dalhousie was convinced that the Indians should be paid at a higher rate and he had worked out a scheme for such revision. But his scheme seems to have been only partially accepted and there is no indication to show that his original proposal for creation of a senior grade of munsiff with a salary of Rs. 500/- per month was accepted by the government.[11] It appears that far from making any attempt to improve the salary of the Indian employees, the government was eager to make further retrenchment in their pay packet. Thus when the statutory civil service was introduced under public pressure, the government promptly reduced the pay of a deputy magistrate from Rs. 200/- to Rs. 150/- per head per month.[12] The retrenchment was proposed to minimise the burden on government treasury arising out of the creation of a few superior offices reserved for the Indians.

The attitude of the government was clear enough to show its racial prejudice against the Indians. The Indians were paid at two-thirds of what was paid to a European employed in the same service and doing (or at least purporting to do) exactly the same nature of work. The discrimination created much discontent, but the officials came to justify the policy vigorously. Thus F. J. Halliday, the first Lt. Governor of Bengal considered that the Indians were sufficiently remunerated for their services and he thought it quite undesirable to pay the 'native civil servants' at the same rate as Europeans. In his evidence before a parliamentary committee, Halliday observed that an Indian servant of the government working in his own native land ought not to be paid "at the same rate as an Englishman coming from England".[13] The views of Halliday were fully endorsed by C. H. Cameron who although known for his pro-Indian bias in many respects, expressed in favour of making payment at a higher rate to the Europeans coming to serve India "in the midst of some climatic hazard unknown in their country".[14] Contrary opinions expressed by men like G. R. Clark, Governor of Bombay,[15] and Sir E. Perry, Chief Justice of the Supreme Court of Bombay,[16] failed to bring any effective response upon the policy of the government. The views of the government were quite clear. Although men like Trevelyan, a British colonial administrator of known repute, had impressed upon the necessity of giving adequate remuneration to the Indian employees,[17] and liberal statesmen like J. Sullivan advised to help the Indian functionaries grow honest in their position in the same manner in which Lord Cornwallis had purchased the European integrity in India by high salaries,[18], the government showed but little concession in the matter. Financial condition of the Indian employees, therefore, continued to remain worst and many of them would quit the job at the first opportunity. Thus, Tarachand Chakravarty, one of the first batch students of the Hindu College, resigned from his service as munsiff in Hooghly, because the duties of the office "were incommensurate with the salary it offered, seemed humiliating to him".[19] The injustice meted out to the Indian employees in respect of their salaries seemed most flagrant when the qualification of such poorly paid men are held in constrast with those of the Europeans receiving a higher remuneration. F.Millet, who was examined before a committee of the parliament expressed his dissatisfaction for the very humble pittance that was paid to the munsiff who were appointed through a tough examination on civil regulations and rules of civil procedure.[20] The matter has also been pointed out by a section of the nationalist press where it was claimed that as the candidates for munsiffship had to pass a stricter examination than the European civilians, the latter had no right to receive a higher pay.[21] But such criticism came to no avail and there was no indication of a change in the policy of the government.

Besides being paid at a poor rate, the Indian employees were also denied of all retirement facilities. Formerly the uncovenanted service holders were entitled to a pension from the *Warden Fund,* which was subscribed to by the Indian members of that service. In 1832, the fund was replaced by a system of superannuation pension which though provided a pension for a retired employee did not make any parallel provision for the maintenance ot the members of the family of a retired or deceased government servant.[22] J. Pestonjee, a very knowledgeable person of the time, had referred to the case of a very trusted government servant of Bombay, Bazonjee Palonjee, whose death had practically thrust the members of his family to beggary and destitution.

The government refused to make any provision for them and even a small annuity of 4s, (or Rs. 2/-) a week could not be granted to the poor widow of the government servant.

The lack of security in government service constituted another sorry feature in the condition of Indian employment. The problem was such that a large number of Indians having an alternative means of livelihood would refuse to be placed in government service. Sir E. Perry had once advised one of a *native* gentlemen in Bombay to place his young, able and educated son in the government service. But this was not to be and the reason for not entering his son in government service was stated by the gentleman to be a "fear of his (the government servants) being turned out in disgrace on some small point on which he might give dissatisfaction to his superior." An almost similar case had happened when Roy Kishory Chand Mitra, a junior magistrate of Calcutta Police was dismissed on the charge of his being "hurried, slovenly and unbusiness like".[24] The case of Sanjib Chandra Chattopadhya, brother of the celebrated Bengali novelist also demonstrates the extent of vindictiveness on the part of the European authorities which earned his dismissal from the service. He had lost his job for it is believed, that he had made a joke in the company of his office masters which was supposed to have shown his lack of a sense of awe and respect for his venerated boss. As he could not be easily thrown out of service, his mark-sheet at a departmental examination was tampered with and he was shown to be disqualified for the job.[25]

As a matter of fact the tenure of service of an Indian depended very much on the whims and caprice of his European masters. There was no rule to determine whether an Indian who was turned out of office, actually deserved the punishment and if there was actually an offence on the part of the employees, the authorities would prescribe different punishment for the same offence according as it was committed by an Indian or a European. Perry would recall the case of an Indian judge who being accused of corruption and misconduct was dismissed after his trial by a Zillah Judge, although the case against him was supposed to be "got up by the assistant judge".[26] As against this, Malcolm Lewin, a former judge of the Sadar Adalat in Madras, had referred the instances of two other European judges which may clearly reveal the loud bias of the authorities in favour of men of their own colour and race. In the first of these cases, a European judge of the Sadar Adalat was allowed to have his pension after he had voluntarily resigned from service and left India on being accused of charges affecting his character as a servant of the government. In the second case another judge of the Sadar Adalat was found guilty of having "pecuniary dealings with a native prince" and was held by the court of directors to be ineligible to hold any employment in the Company's service. But the man was allowed to retire from his service on usual pension. The exorbitant favour shown to these European judges had led Lewin to conclude that if these men had been natives of India they would be "turned adrift with the loss of their pension and everything else."[27] Robinson, a senior member of the Sadar Board of Revenue in the N. W. Provinces, also narrated a similar experience. The first of the cases referred to, is about an Indian *tehsildar* who was dismissed by the collector on the ground "that he had disposed of a pony by raffle, and had made the people attached to his court take tickets for it." Almost the same time when the said *tehsildar* was dismissed, a European civil servant disposed of a bungalow upon the same terms. The matter came to the knowledge of the government. The *tehsildar* was dismissed and died as such. The civil servant on the contray, received a reprimand, and was simply ordered to return the money which he had taken for the tickets of his bungalow. Robinson mentioned these cases which he thought would "show that there is one rule of punishment for the *native,* and another rule of punishment for the European."[28]

The prejudice against the Indian employees were most pronounced among the non-official European businessmen community of India. The Indian officials who would not allow them to follow up their pursuits in violation of the laws of the land remained a target of attack both by them and their friends in the higher rank of administration. A section of the nationalist press had openly alleged that a large number of European officers, mostly of the ranks of Commissioners, Magistrates and Collectors had acquired business share with some of the indigo merchants of the land.[29] These men would zelously guard the interest of the mercantile community and if need be, they would even remove the Indian officers in the interest of their partners in trade. The case of maulavi Abdul Jabbar, a magistrate of Sirajgunj may be recalled here.[30] Jabbar had taken action for the lawless acts done by Mr. Barry, an indigo planter of the locality who was accused of sowing indigo in land to which he had no right. The government, however, in stead of rewarding this upright officer, punished him for his termity.

Contemporary records bring into light innumerable instances when the Indian officers were dismissed from service on what appears to a modern mind to be flimsy grounds. Thus in the case of Pran Nath Bose, deputy collector, Zillah Burdwan, a charge was brought against him for "his leaving station without prior permission" and he was dismissed for this minor offence.[31] Babu Gopi Mohon Ray, deputy collector, Chittagonj, was similarly removed from office on the negligible ground of his having felt "disconcerted that he was sent against his will to Tipperah."[32] Maulavi Fazal Ali, deputy Collector of Saraun was also thrown out of service, as the Commissioner of Patna found him to be "indifferent, . . . a better Poet than Settlement officer.[33] Sri Madhusudan Patnaik, a deputy Collector, who in appreciation of his service was even appointed to the charge of such an important subdivision like Khurdah, suddenly fell from the favour of the authorities in 1860, whereupon he was dismissed on his supposedly being found "guilty of having tampered with the records of Government."[34]

It is thus clear, that Indian employees often fell victims of frivolous charges preferred against them by the authorities. Perry had informed the parliamentary committee that the Court of directors, had, in a separate despatch to India conveyed its dissatisfaction about the mode in which "native servants of rank and consideration have been turned out of office without sufficient enquiry."[35] Robinson recommended that all '*native* servants' whose employment involve the exercise of the considerable degree of intellect, should be "secured in their appointments from being removed by any authority less than that of the Government." The *Hindu Patriot* had observed that "there are few among the administrative evils of this country more seriously felt than the insecurity of the tenure" by which the Indian officers came to hold their offices.[36] But criticism or suggestion could neither relax the attitude of the government and the poor Indian employees were deliberately kept under a state of perpetual tension and anxiety.

A study into the condition of Indian employment is never complete unless one tries to contrast the volume of work which each of the two categories of government servants,—the Indians and Europeans, were called upon to discharge while in office. A correspondent on a contemporary newspaper described the European servants of the government as a band of 'Got-little-or-nothing-to-do' people, who would usually behave like a 'Celestial Brother' to the enduring and hard-worked uncovenanted" Indians.[37] Long before this comment was passed, Bentinck had made a similar observation while he came to bear evidence before a committee of the House of Commons in 1837. Writing about these European civil service men, Bentinck remarked, "They are wholly incompetent .... and in their hands administration .... has been a failure". But the irony of British administration lies in the fact that the government of nearly 60 millions of people was run mostly for the benefit of these "800 or 1000 individuals who are sent from England to make their fortunes."[38]

It is this herd of self-seeking European superiors who made allotment of duties for their Indian subordinates, keeping themselves and other Europeans serving in the subordinate cadre absolutely free from all official obligations. The Hindu Patriot had openly charged the court of directors for maintaining a harsh policy towards the Indians who being no part 'of the guild which constitutes the governing class' were always kept overworked and unrewarded.[39] The bulk of these officials were subjected to hard labour, in order to provide leisure to their European superiors. A majority of these European officers would not even turn up at their offices before the afternoon hours of the day and even the Anglo-Indian employees were reportedly enjoying the privilege of coming later in office.[40] Lewin had complained "that in the conduct of the Government towards Europeans in comparison with their conduct towards natives there was the greatest possible partiality."[41] This partiality in favour of the

Europeans enabled them to get the maximum burden of work done by their Indian colleagues while themselves remaining free from all engagements.

When Lord Cornwallis took up the reins of administration in India, he had very soon allowed the Company's European servants to receive a higher rate of salary, a measure which he thought would be useful to check the dishonesty among the responsible servants of the Company. Unfortunately no such attempt was made in respect of the Indian employees. The administrative tradition thus set up by Cornwallis continued long after, almost throughout 19th century and the entire people had been stigmatised "as unworthy of trust, as incapable of honesty fit to be employed only when" it cannot be done without them.[42]

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BOOK REVIEWS

Decipherment of Shell Script by B. N. Mukherjee. Bulletin of Museums & Archaeology in U.P., No. 31, June 1983. State Museum, Lucknow, Rs. 6/-, 46 pp., 20 plates.

The writings of Professor B. N. Mukherjee are familiar to scholars in the field of south Asian history and archaeology. The above, his most recent book, which is devoted to the palaeographic examination of Shell inscriptions in India serves to introduce to us a fascinating new field of research.

The Shell script, one of a variety of the still undeciphered scripts in India, has long remained an enigma to scholars. The Shell inscriptions, however, were first brought to the notice of the public by James Prinsep and Robert Montogomery as early as the thirties of the last century. Since then, a considerable number of specialists including C. M. Pleyte, K. P. Jawaswal and others had persevered from time to time to read the inscriptions. But very little progress had been made toward the decipherment of the script. This was partly due to our investigators' inability to assemble all the materials in one comprehensive collection and also partly to their difficulties in understanding the meaning and significance of the style of the writing. It is the energy and learning of Professor Mukherjee together with his flair for handling obscure scripts which has made his attempt so exceptionally fruitful.

The Shell script is so called because writings in this script are drawn in spiral design and the characters bear an apparent resemblance to the shape of conch-shell. It now seems well established that the derivation of the script is from that of *Brāhmī*, but the style of writing is distinguished by a high degree of calligraphic ornamentation. The most important common characteristics which contribute to the peaculiarity of the forms comprise the following : (1) The ends of letters or medial signs or subscript signs are drawn with great flourishes forming different patterns. (2) The forms are written in a cursive and ductile manner, each character having been linked to the following character by means of superficial lines. (3) Frequently, the letters are moved clockwise, or, as is more often the case, anti-clockwise by an angle of 60°—

90° (in a few cases even 180°) to the left or right of their usual vertical positions. As a result, they acquire a horizontal orientation and at times even an inverted orientation. Hence the script is called the *ava-mūrdha-lipi* in the *Lalitavistāra* or *Vyatastālipi* in the *Mahāvastu-Avadāna*.

From the results of epigraphic research carried out in the recent past, it may be shown that the script had a very widely spread use in India during the centuries between the fourth and the seventh of the christian era. The shell inscriptions written on stone surfaces on rocks, pillars, sculptures, seals, and elsewhere, have been found in fairly large number from almost every part of the sub-continent from Jammu and Kashmir in the north to Karnataka in the south, and from West Bengal in the east to Gujerat in the West. They are noticed also in south-east Asia.

Dr. Mukherjee's text is not lengthy, but contains requisite and precise details about the palaeographical technique of the shell writing. It is divided between three chapters devoted respectively to giving an outline of the progress registered to date in the study of the script, its actual decipherment by him and summary observations on the nomenclature and other salient features of the script. The section dealing with the account of his decipherment of the writing on the stone sculpture of horse belonging to the rule of the Gupta emperor Kumāragupta I (Ca. A.D. 413-455), now in the collection of the State Museum, Lucknow, is of abiding interest. Two appendices are also included, the first of which touches upon the excellence of the artistic quality of the animal figure which bears two shell inscriptions. Incidentally, the stone horse is unique in that, as a datable independent animal figure it is the only one of its kind in the whole range of sculptures produced during the Gupta epoch. In the other appendix, the author gathers together excerpts from authoritative texts of ancient India of Brahmanical, Jaina and Buddhist origin on the various kinds of scripts prevalent in India during the historical period. One notices that the author is indeed closely acquainted with the originals as well as with the latest results of research.

That in the context of Indian history, the inscriptions constitute our most reliable source of information has long since been recognised. The reconstruction of an exact account of early Indian civilisation owes its very foundation to the revolutionary discovery of the *Brāhmī* script by James Prinsep. In the palaeographic line as in the historical line, the wealth of materials tends to increase every year. The success of the Calcutta University Professor in his effort to explain the quizzical shell writing is admittedly not an end in itself, for the interest has remained focussed on the texts of two inscriptions only occurring on the body of the aforementioned stone horse. But it unquestionably adds a new dimension to epigraphic research in this country. To that extent, his attempt must be considered as a pioneer work in the field.

A word or two of praise must be reserved for the authorities of the State Museum in Lucknow for taking pains to bring out this worthwhile monograph.

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